DOCUMENT RESUME

ED 115 941   95   CE 005 835

TITLE   Architectural Barriers to Physically Disabled Persons in Wisconsin's Vocational, Technical, and Adult Education System. Final Report.
INSTITUTION   Wisconsin Univ. - Stout, Menomonie. Center for Vocational, Technical and Adult Education.
SPONS AGENCY   Office of Education (DHEW), Washington, D.C.; Wisconsin State Board of Vocational, Technical, and Adult Education, Madison.
REPORT NO   VT-102-324
PUB DATE   Jun 75
NOTE   135p.

EDRS PRICE   MF-$0.76 HC-$6.97 Plus Postage
DESCRIPTORS   Adult Education; *Architectural Barriers; *Check Lists; Facility Planning; Facility Requirements; *Handicapped Students; *Physically Handicapped; Safety; *School Buildings; Tables (Data); Vocational Schools
IDENTIFIERS   Wisconsin

ABSTRACT

The project was designed to determine what architectural barriers to physically disabled persons existed in Wisconsin's vocational, technical, and adult education system's institutions. A checklist based on the American Institute of Architects' recommendations was developed and completed for one school in each district to determine the presently existing architectural barriers, including entrances and exits, elevators, fire escapes, restroom facilities, ramps, and corridors. In addition, existing barriers in classrooms, laboratories, learning centers, food service, and recreation areas were identified. Finally, a checklist rating scale was developed to determine the campus modifications required in order to offer programs to persons with physical disabilities. Chapter 2 is concerned with the methods and procedures used to develop the architectural barrier checklist, the checklist guide, and the population of the project. Chapters 3 and 4 contain project results and recommendations. (NJ)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ARCHITECTURAL BARRIERS TO PHYSICALLY DISABLED PERSONS IN WISCONSIN'S VOCATIONAL, TECHNICAL, AND ADULT EDUCATION SYSTEM

Final Report

Project No. 19-00~~7~~6-151-225-A

U S DEPARTMENT OF HEALTH.
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Conducted by
KEITH FRANK

A SUB-PROJECT OF THE GRADUATE STUDENT PROJECT PHASE
Project No. 19-007-151-225

PROJECT DIRECTOR
ORVILLE NELSON

CENTER FOR VOCATIONAL, TECHNICAL AND ADULT EDUCATION
UNIVERSITY OF WISCONSIN-STOUT

June, 1975

The research reported herein was performed pursuant to a grant or contract with the Wisconsin Board of Vocational, Technical and Adult Education, partially reimbursed from an allocation of federal funds from the U. S. Office of Education, U. S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent offical State Board of U.S. Office of Education position or policy.

CE 005 835

VT-102-324

2/3

TABLE OF CONTENTS

Page

List of Figures i
List of Tables ii
Acknowledgements iii

Chapter I: Problem and Purposes

Summary . . . . I- 1
Problem . . . . I- 2
Objectives . . . . I- 2
Need . . . . I- 3
Rationale . . . . I- 4
Definitions . . . . I- 4

Chapter II: Methods, Procedures and Population

Population and Sample . . . . II- 1

Instrumentation

Development . . . . II- 1
Validation . . . . II- 8
Piloting . . . . II- 8
Reliability . . . . II- 9
Data Collection Procedure II-10
Data Analysis II-11

Chapter III: Results

Introduction . . . . III- 1
Objective 1 . . . . III- 1
Objective 2 . . . . III- 1
Summary of Parking Lot Barriers . . . . III- 2
Summary of Walk Barriers . . . . III- 3
Summary of Entrance Barriers . . . . III- 4
Summary of Emergency Readiness Barriers . . . . III- 5
Summary of Elevator Barriers . . . . III- 6
Summary of Exterior Door Barriers . . . . III- 7
Summary of Interior Door Barriers . . . . III- 8
Summary of Interior Stairs Barriers . . . . III- 9
Summary of Water Fountain Barriers III-10
Summary of Interior Ramp Barriers III-11
Summary of Exterior Ramp Barriers III-12
Summary of Men's Restroom Barriers III-13
Summary of Women's Restroom Barriers III-15
Summary of Floor Barriers III-17
Summary of Public Telephone Barriers III-18
Summary of Identification Barriers III-19
Objective 3 . . . . III-20
Summary of Media Resource Center Barriers III-21
Summary of Learning Center Barriers III-22

TABLE OF CONTENTS (Cont'd.)

Page

Summary of Physical Education Barriers III-23
Summary of Spectator Sports Arena Barriers III-24
Summary of Laboratory Barriers III-25
Summary of Lecture Hall and Classroom Barriers III-26
Summary of Food Service Area Barriers III-27
Summary of Recreation Area Barriers III-28
Most Common Architectural Barrier Deviations from the OSHA and Wisconsin Administrative Code Standards . . . III-29
Most Common Architectural Barrier Deviations from Non-OSHA and Non-Wisconsin Code Standards III-30
Objective 4 . . . . III-31
Non-Ambulatory III-32
Semi-Ambulatory III-33
Sight Disabled III-34
Incoordinated III-35
Hearing Disabled III-36
Basic Architectural Barrier Considerations for all Disability Groups III-37

Chapter IV: Recommendations

Parking Spaces . . . . IV- 1
Entrances . . . . IV- 1
Elevators . . . . IV- 1
Emergency Readiness . . . . IV- 1
Ramps . . . . IV- 2
Restrooms . . . . IV- 2
Water Fountains . . . . IV -2
Floors . . . . IV- 2
Public Telephones . . . . IV- 2
Identification . . . . IV- 2
Laboratories, Classrooms, Food Service Areas, Learning and Media Resource Centers and Recreation Areas . . . . . IV- 3
General . . . . IV- 3

References . . . . R- 1

Appendices

Appendix A: Wisconsin Administrative Code, Chapter 52.04
Appendix B: Occupational Safety and Health Act (OSHA) Extractions
Appendix C: Architectural Barrier Checklist Guide
Appendix D: Architectural Barrier Checklist
Appendix E: Pamphlet "Checklist for 14 Common Barriers to the Physically Disabled in Vocational and Technical Education Facilities
Appendix F: Anthropometrics of Physically Disabled Persons
Appendix G: Wheelchair Specifications

List of Figures

Page

1. Architectural Barrier Categories as Extracted from References. II-4

2. Refined Architectural Barrier Categories Used in the Checklist Guide. II-5

3. Sample Section of the Architectural Barrier Checklist Guide. II-6

4. Sample Section of the Architectural Barrier Checklist. . . .II-7

List of Tables

Page

1. Sample Wisconsin Administrative Code Reference . . . . II- 3
2. Sample OSHA Reference . . . . II- 3
3. Summary of Parking Lot Barriers . . . . III- 2
4. Summary of Walk Barriers. III- 3
5. Summary of Entrance Barriers. . . . . III- 4
6. Summary of Emergency Readiness Barriers . . . . III- 5
7. Summary of Elevator Barriers. . . . . III- 6
8. Summary of Exterior Door Barriers . . . . III- 7
9. Summary of Interior Door Barriers . . . . III- 8
10. Summary of Interior Stairs Barriers . . . . III- 9
11. Summary of Water Fountain Barriers. III-10
12. Summary of Interior Ramp Barriers III-11
13. Summary of Exterior Ramp Barriers III-12
14. Summary of Men's Restroom Barriers. III-13
15. Summary of Women's Restroom Barriers. III-15
16. Summary of Floor Barriers III-17
17. Summary of Public Telephone Barriers. III-18
18. Summary of Identification Barriers. III-19
19. Summary of Media Resource Center Barriers III-21
20. Summary of Learning Center Barriers III-22
21. Summary of Physical Education Barriers. III-23
22. Summary of Spectator Sports Arena Barriers. III-24
23. Summary of Laboratory Barriers. III-25
24. Summary of Lecture Hall and Classroom Barriers. III-26
25. Summary of Food Service Area Barriers III-27
26. Summary of Recreation Area Barriers III-28
27. Presently the Most Accessible Districts for Non-Ambulatory Persons. III-32
28. Presently the Most Accessible Districts for Semi-Ambulatory Persons III-33
29. Presently the Most Accessible Districts for Sight Disabled Persons. III-34
30. Presently the Most Accessible Districts for Incoordinates . III-35
31. Presently the Most Accessible Districts for Hearing Disabled Persons. III-36

Acknowledgements

At this time, I would like to extend my sincere appreciation to the many persons who were instrumental in the development of this project, from the concept stage, its implementation and into the present final report. Firstly, I would like to thank Dr. Robert Rudiger for his encouragement in developing this concept into a funded research project.

Under the patient guidance and expertise of Dr. Orville Nelson, the project took form, first, as a proposal which was later reviewed and accepted for funding by Mr. Roland Krogstad of the Wisconsin Board of Vocational, Technical and Adult Education.

Once funding was obtained, I was fortunate enough to obtain the active support and leadership of Mrs. Carol Hogstad and Mr. Tony Langton, in addition to Dr. Orville Nelson. It was because of the willingness of these three persons to share both their knowledge and time that this project met its objectives. I would also like to thank Mr. John Olson for the technical assistance he extended to the project, particularly on the checklist design and general safety considerations.

I would also like to express my appreciation to all of Wisconsin's VTAE Districts for their cooperation and general support of both the project and the concept of providing educational opportunities for physically disabled persons.

I was grateful also to Mr. Ronald L. Mace for permitting us to include sections of An Illustrated Handbook of the Handicapped Section of the North Carolina State Building Code (see References) in this final report. All other quotations and references were material of public domain.

This project's success was also largely determined by the timely, efficient clerical support it received. Mrs. Julie Hintzman, Mrs. Kathy Johnson, Mrs. Bobby Johnson, Miss Juanita Comeau, Mrs. Wanda Culp and Mrs. Linda Walker were key persons in this effort.

Lastly, I would like to thank my wife, Betty, and sons, Scott and Andy, for their continued patience, understanding and support during this time-consuming, but productive effort.

Chapter I

Problem and Purposes

Summary

The purpose of this project was to:

A. Assemble relevant sources of information concerning architectural barriers (anything that limits or restricts building or campus accessibility to physically disabled persons).

B. Arrange this information in a form that could be used as a reference guide by all VTAE Districts.

C. Develop a checklist from this information and complete one checklist for all VTAE Districts.

D. Determine the presently existing architectural barriers inherent to building or campus design and project their effect upon the educational opportunities or limitations presently available to physically disabled persons.

Information sources which suggested architectural standards to eliminate architectural barriers and promote safety were collected from federal and state levels. The relevant information from these sources was compiled into a checklist guide. The standards in the checklist guide were organized by topic with a reference to the originating source so that easy referral could be made.

From this composite of standards were taken those which related specifically to architectural barriers. These standards were listed by category (such as parking lot) and a discrepancy scale was designed to measure the degree to which any potential barrier met the standard. This instrument was called the checklist.

Once the checklist was designed, an on-site visitation was scheduled for one campus in each VTAE District in Wisconsin. The visitation usually consisted of this researcher and a district representative walking through the entire campus and buildings while using the checklist guide as a reference and filling out the checklist. After the visit a copy of the completed checklist was returned to the district for their information and reference. A list of what this researcher considered the district's "Major Assets" and a list entitled "Suggestions for Improving Accessibility" was sent along with it.

Upon completion of all visitations, the data were used to obtain a VTAE system-wide perspective of architectural barriers. A sample of the most common architectural barriers to the physically disabled would include:

A. An insufficient number of reserved parking spaces.

B. Water fountains mounted too high to get a drink.

C. Toilet stalls too short to get the door closed with a wheelchair inside.

D. Public telephones mounted too high to be used by a person in a wheelchair.

E. Building entrances without proper identification.

A sample of the present accessibility would include:

A. Most buildings are accessible.

B. Generally, the provision of accessible restroom facilities.

C. All laboratories and classrooms can be entered and used.

D. Accessible elevators in multi-story buildings.

E. Some reserved parking spaces.

Conclusions, implications and recommendations were then offered for consideration to the Wisconsin Board of Vocational, Technical and Adult Education.

Problem

The problem of this project was to determine what architectural barriers, including fixed equipment, presently exists to physically disabled persons in the State of Wisconsin's Vocational, Technical and Adult Education System's institutions and their subsequent system-wide implications for future educational planning for the physically disabled person.

Objectives

A. Develop a checklist to determine architectural barriers based upon the American Institute of Architects recommendations and complete one checklist for all VTAE Districts.

B. Determine the presently existing architectural barriers on one campus of each VTAE District. A sample architectural barrier would include building entrances and exits, elevators (if a multi-story building), fire escapes, restroom facilities, interior doors, ramps and corridors.

C. Determine the existing architectural and equipment barriers in classrooms, laboratories, learning centers, media resource centers, food service areas, and recreation areas on one campus in each VTAE District.

D. Develop a checklist/rating scale which can be utilized to determine the campus modifications required to offer programs for persons with physical disabilities.

Need

The Wisconsin Board of Vocational, Technical and Adult Education (WBVTAE) has had responsibility to serve all of Wisconsin's citizens who desire vocational or technical education. Together with the Department of Public Instruction, the VTAE system was the recipient of federal funds designated specifically for use in providing educational opportunities for the handicapped. These educational opportunities could be provided only if the facilities at each VTAE District were useable by potential students with special mobility needs; for example, the elimination of architectural barriers.

An architectural barrier was defined as any condition that restricts the ability of a person with a functional limitation caused by impairments of sight, hearing, incoordination, semi-ambulatory or non-ambulatory disabilities to approach, enter, and leave a building, circulate through the public building, use the toilet facilities and participate in educational programs without assistance. A functional limitation may require aids such as wheelchairs, crutches, braces, or canes.[1] The process of eliminating architectural barriers must then include classrooms, laboratories, learning centers, media resource centers, recreation areas, and food service areas, as well, if needs of students with limited mobility are going to be met. Recently, the Wisconsin State Advisory Council for Vocational, Technical and Adult Education initiated some direction to meet the needs of these limited mobility students.

It has been suggested by the Council that, "It is unrealistic to expect every local district to be able to provide technical training to the full range of disabled students."[2] Subsequently, the Council made the following recommendation:

> "The State Board should explore the possibility of designating certain districts as the primary dispensers of training to those persons with a particular category of disability."[3]

Along with the removal of architectural barriers to help promote educational opportunities to physically disabled students, the movement to eliminate educational barriers has also been obvious in Wisconsin. Chapter 89 of the

---

[1] Wisconsin Administrative Code 52.04, p. 11

[2] Ray M. Douglas, Wisconsin Vocational, Technical and Adult Education Districts and the Handicapped: A Survey of Consumers, Center for Studies in Vocational and Technical Education, University of Wisconsin-Madison, Madison, Wisconsin, July, 1974.

[3] Ibid.

Laws of 1973 states that "no child with exceptional needs shall be denied an education at public expense to meet his needs and capabilities."[4] The stipulated age range was 3 to 21 years with the responsibility for the programs given to the local school district. This seemed to suggest that Wisconsin's VTAE system should take a look at its educational institutions to determine whether it has the present capabilities to educate physically disabled persons or those with "exceptional needs."

Rationale

Within the last 20 years, there has developed an increasing public response to include all persons, regardless of age, sex, religious beliefs, color, physical disabilities, and so forth, into the mainstream of life. This movement toward equality has created an environment that has produced anti-discrimination legislation across the nation. The need for and birth of a national awareness to eliminate architectural barriers was dramatically learned in 1957 when the late Hugo Deffner, an insurance man from Oklahoma City and selected Handicapped American of the Year, was not able to negotiate a stairway to receive his award from President Eisenhower. Ten years after the President's Committee on Employment of the Handicapped and the National Easter Seal Society for Crippled Children and Adults co-sponsored a project to eliminate barriers to the handicapped in public buildings and facilities, President Johnson signed Public Law 90-480. This legislation required that all federal structures, as well as those financially assisted with federal funds, be made accessible to the handicapped. The law also stipulated that when public structures undergo extensive alterations, the elimination of barriers to the handicapped shall be included as a part of the contract. About 40 states, including Wisconsin, have passed similar measures requiring that state-owned buildings be made accessible (barrier free) to the handicapped.

Wisconsin's standards were located in the Wisconsin Administrative Code, Chapter 52.04 (Code) entitled "Requirements for Barrier-Free Environments." This Code has been enforced by the Department of Industry, Labor and Human Relations and affected new building construction as well as buildings undergoing remodeling and adding additions. Its scope was "to insure that all public buildings and places of employment shall be accessible and useable by all citizens, including those with functional limitations."[5] The Code was a major source of standards used in the development of the checklist used in this project to identify architectural barriers in Wisconsin's VTAE System. Its development was discussed in Chapter II.

Definitions

Access or accessible: "The ability of a person with a functional limitation caused by impairments of sight, hearing, incoordination, perception, semi-ambulatory, or non-ambulatory disabilities to enter and leave a building, circulate through a public building, and use the public toilet facilities without assistance or to be useable by all physically disabled persons."[6]

---

[4] Thompson, Barbara, Wisconsin State Superintendent of the Department of Public Instruction, Chapter 89, Laws of 1973, Education of Exceptional Children.

[5] Wisconsin Administrative Code, Chapter 52, Section .04, p. 11.

Appropriate Number: "Means the number of a specific item that would be necessary, in accord with the purpose and function of a building or facility, to accommodate individuals with specific disabilities in proportion to the anticipated number of individuals with disabilities who would use a particular building or facility."[7]

Architectural Barrier: Anything which limits or restricts building or campus accessibility or usage.

Architectural: The art or profession of designing and constructing buildings, bridges, and so forth.

Barrier: Anything that prevents passage or approach; an obstruction or hindrance.

Category: A major subsection of the architectural barriers checklist and checklist guide, such as Parking Lot, Restroom or Food Service Area.

Clear Space: The distance between the floor and the underneath side of an object, such as a table or study carrel.

Code: Wisconsin Administrative Code, Chapter 52, Section .04, entitled "Requirements for Barrier-Free Environment."

Controls: Switches or controls for light, heat, ventilation, windows, draperies, fire alarms, electrical outlets, and so forth.

Corridor: An interior passageway or hall.

Disability: A physical condition that is atypical, can be diagnosed consistently by a medical doctor, and has an objective aspect that impairs performance.

Functional Limitation: A mobility limitation caused by impairments of sight, hearing, incoordination, semi-ambulatory, or non-ambulatory disabilities. They may require aids such as wheelchairs, crutches, braces, or canes.

Grading: Sloping the ground so that it is level with a normal entrance, even if contrary to existing topography.

---

[6] Wisconsin Administrative Code, Chapter 52, Section .04, p. 11.

[7] "Making Buildings and Facilities Accessible to, and Useable by, the Physically Handicapped," American National Standards Institute, 1430 Broadway, New York, New York, 1971.

Handicap: The cumulative result of the obstacles which disability interposes between the person and his preferred functional level.

Handicapped: "Mentally retarded (IQ 50-90), hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, crippled, or other health-impaired who, by reason of their handicapping condition, have difficulty succeeding in a regular vocational or consumer and homemaking education program without special educational assistance, or who require a modified vocational or consumer and homemaking educational program."[8]

Identification: Appropriate use of signs or markings to identify the accessibility of building entrances, restrooms, water fountains, parking spaces, public telephones, building exits, hazardous areas or interior rooms using raised letters and numbers, mounted 54" to 66" high, on the wall, and identifying the function of the room or area.

Major discrepancy: The checklist rating noting a condition that will prevent a physically disabled person from using the object or area in question. A major variation from the appropriate standard.

Minor discrepancy: The checklist rating noting a condition which does not fully comply with the appropriate standard but would not prohibit the object's or area's use in most cases.

No discrepancy: The checklist rating noting a condition which meets or exceeds the appropriate standard for the object or area in question.

Not applicable: The standard does not apply to the object or area in question.

Physical Disabilities:

A. Non-ambulatory: those individuals who, for all practical purposes, are bound to wheelchairs, regardless of cause.

B. Semi-ambulatory: those individuals who walk with difficulty or insecurity, such as persons using braces and/or crutches, amputees, arthritics, spastics, pulmonary and cardiac cases.

C. Sight Disabled: those individuals who are totally blind and those whose sight is impaired to the extent that ambulation in public areas is insecure and hazardous.

D. Incoordinates: those individuals whose disabilities leave them with faulty coordination or palsy from cerebral injury, spinal injury or peripheral nerve injury.

---

[8] Lehrmann, Eugene, State Plan for Vocational Education in Wisconsin, 1974-1978, Wisconsin Board of Vocational, Technical and Adult Education, Madison, Wisconsin, May 29, 1973. p. 32

E. Hearing Disabled: those individuals who are deaf or have a hearing handicap to the extent that they might be insecure in major public areas or in industrial situations because they are unable to communicate or to hear warning signals.

Also, see Handicapped

Ramps: A walk or walkway whose slope was greater than 5%.

Standard: Those individual elements which are numbered 1., 2., 3., and so forth, and listed under each category (such as parking lot) of the checklist and checklist guide.

Walk: A pre-determined, prepared surface, exterior pathway leading to or from a building or facility, or from one exterior area to another, placed on the existing ground level and not deviating from the level of the existing ground immediate adjacent. Gradient must not exceed 5%.

Wheeling: Moving about in a wheelchair.

VTAE: The State of Wisconsin's Vocational, Technical and Adult Education System.

In summary, then, this project was designed to determine what architectural barriers exist in Wisconsin's VTAE System. These architectural barriers must be recognized and effectively eliminated if educational opportunities for the physically disabled were going to be maximized. Chapter II will continue with the methods and procedures used to develop the architectural barrier checklist, the checklist guide, and the population of the project. Chapter III contains project results. Chapter IV contains project reccommendations.

Chapter II

Methods, Procedures, and Population

Population and Sample

The population of this project was composed of all VTAE Districts in the State of Wisconsin. Where more than one campus existed in a district, the main campus was most commonly selected to represent the district. The three exceptions to this were in the Gateway District where both Kenosha and Racine campuses were visited and the Indianhead and Blackhawk Districts where new construction would replace the present Rice Lake and Janesville campuses. Administrators in these two districts helped select alternative campuses.

The sample of district campuses this researcher visited was as follows:

District	Campus
Blackhawk	Beloit
Fox Valley	Appleton
Gateway	Kenosha and Racine
Lakeshore	Cleveland
Mid-State	Wisconsin Rapids
Milwaukee Area Technical College	Central Complex
Moraine Park	Fond du Lac
Nicolet	Rhinelander
North Central	Wausau
Northeast	Greenbay
Southwest	Fennimore
VTAE District No. 1	Eau Claire
Madison Area Technical College	Madison
Waukesha County	Pewaukee
Western Wisconsin	LaCrosse
Wisconsin Indianhead	Ashland

Instrumentation

Development

The first step in the development of the checklist was to make a composite listing of standards taken from all of the sources used as references. Those references were as follows:

A. "Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped," produced by the American National Standards Institute.

B. "Making Colleges and Universities Accessible to Handicapped Students," produced by the President's Committee on the Employment of the Handicapped.

C. "Making Facilities Accessible to the Physically Handicapped," produced by the New York State Construction Fund.

D. "Requirements for Barrier-Free Environments," Wisconsin Administrative Code, Chapter 52, Section .04. (Appendix A).

E. Excerpts from the Occupational, Safety, and Health Act (OSHA), Volume 39, Number 125, Part II, June 27, 1974. (Appendix B).

The standards included in the first four references were compiled in total. The standards selected from OSHA were those dealing with the emergency exiting of buildings or where the standards agreed with standards suggested by one of the other references. Standards listed within the Emergency Readiness and Special Access Considerations sections of the checklist were in part drawn from the above references and in part added by the researcher.

The criteria used to eliminate any conflicts between standards among the references were as follows:

A. Wisconsin's Administrative Code took precedence when it conflicted with any of the other references. There were no conflicts between the Wisconsin Administrative Code and OSHA.

B. When conflicts arose in standards not covered by the Wisconsin Administrative Code, the most stringent standards were cited.

The compilation of standards took form under the categories as indicated in Figure II-1. The standards listed under the Special Access Consideration categories (such as a classroom) did not give sufficient data to accurately rate the usability of the area (such as, could the student enter the room). These standards were then combined with the standards for room accessibility, identification, and so on, to give a more complete picture of the usability of the area in question. Using this method of drawing standards together, the usability of all other special access areas were determined. This researcher also added standards that were considered relevant to each area generated from personal experiences.

The result of the total compilation effort was the checklist guide (Appendix C) which was diagrammed in Figure II-2. Standards cited from the Wisconsin Administrative Code (Table II-1) or OSHA (Table II-2) were identified with an asterisk(*). A reference number was also cited for these standards so that the origin could be identified. See Figure II-3, for a representative section.

Table II-1

Sample Wisconsin Administrative Code Reference

Parking Lot

*2. Width of reserved spaces (12 feet required). (3)(a)1

*3. A means of access from the parking facility, street, or alley to the building shall be provided. (3)

Table II-2

Sample OSHA Reference

Entrances

*5. Sufficient useable exits by persons in wheelchairs in case of emergencies. OSHA 1910.36(b)(1) and (b)(3)

The checklist guide was used to develop the checklist in the following procedure: all standards extracted from the Wisconsin Administrative Code and OSHA were included and designated with an asterisk (*) as in the checklist guide. Additional standards were chosen from the list under each category (such as parking lots) until there were sufficient standards to give a reliable picture of the architectural barriers present within each category. Categories that did not represent architectural barriers or were inappropriate for the VTAE System were deleted.

The next step in developing the checklist was to design a discrepancy scale to rate the degree to which the item being rated met the requirement of each standard. This scale was divided into four levels. The first level and given the arithmetic weight of 1 was labeled "Major." This meant that a check (✓) in that column designated a major discrepancy from the standard. A check in the second column (weight 2) was designating a "Minor" discrepancy. This signified that the item being

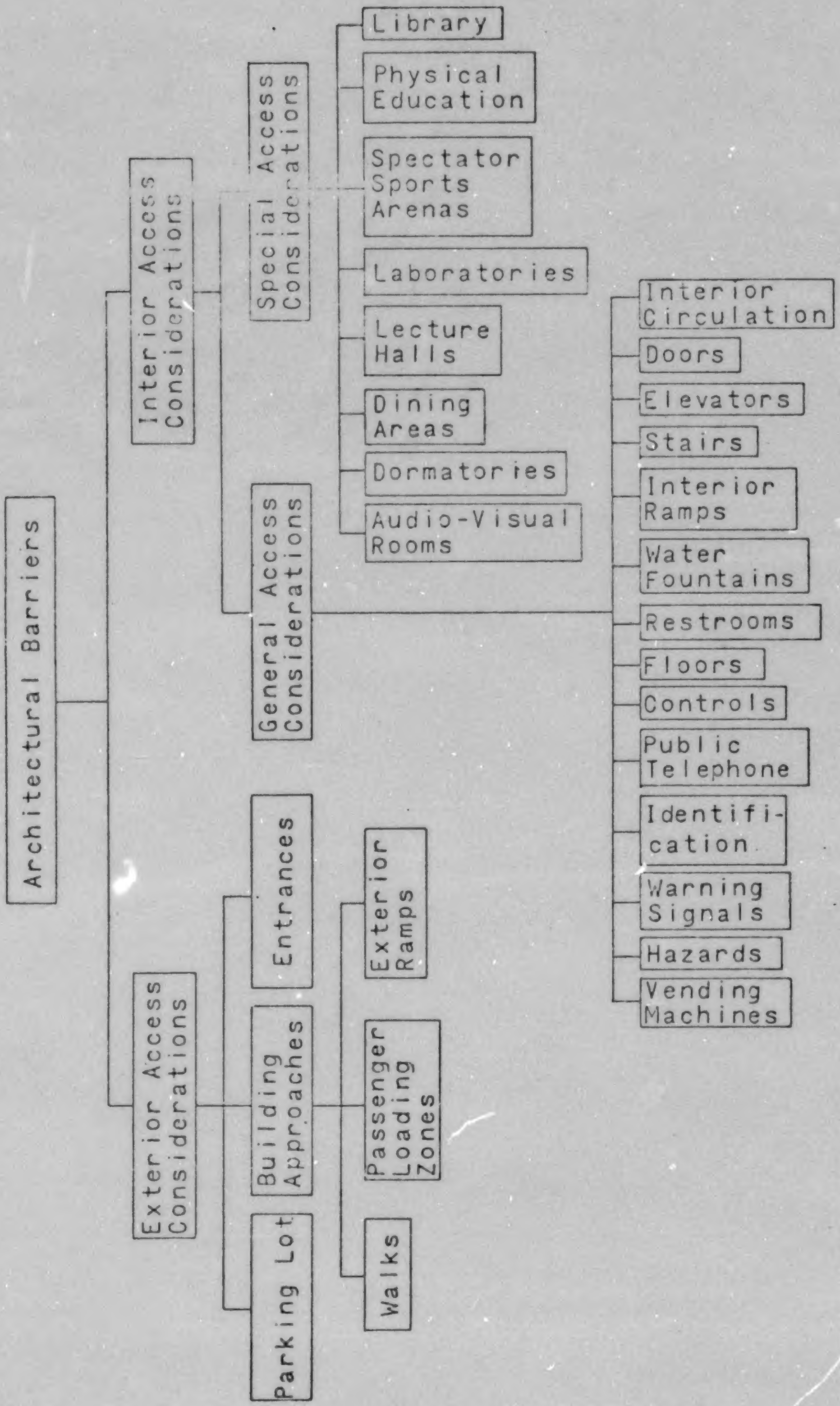


Figure II-1: Architectural Barrier Categories as Extracted from References

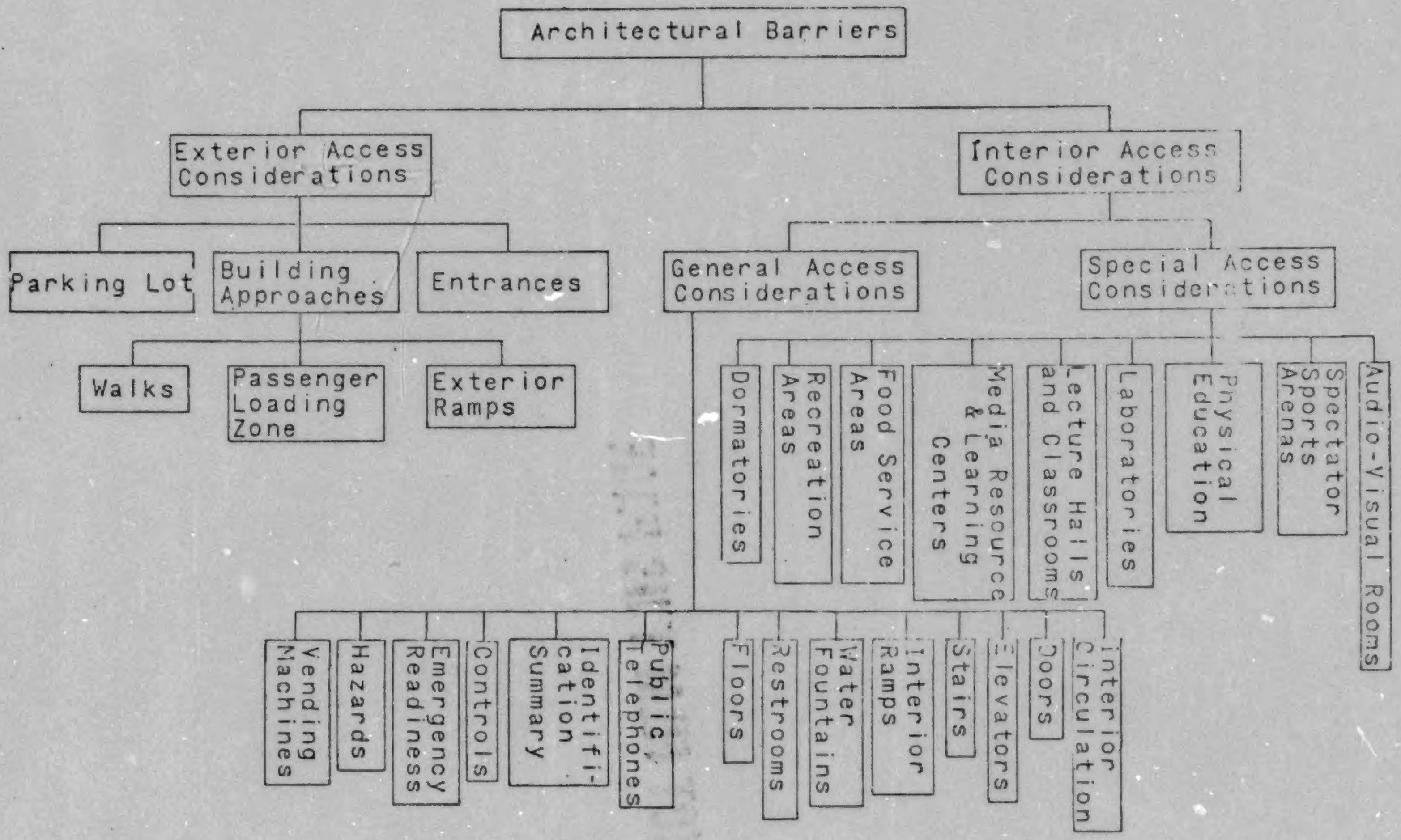


Figure II-2: Refined Architectural Barrier Categories Used in the Checklist Guide

Parking Lot

*1. Number of spaces reserved for the physically disabled:

A. Number reserved ______ (2% required). (3)(a)

B. Total number of spaces ______.

*2. Width of reserved spaces (12 feet required). (3)(a)1.

*3. A means of access from the parking facility, street or alley to the building shall be provided. (3).

*4. Parking spaces shall be identified by signs. (9)(c)1.

*5. Parking spaces shall be located as close as possible to the building entrance accessible to the physically disabled. (3)(a)2.

*6. Parking spaces in a parking ramp to be as close to main entrance of parking ramp, to an adjacent public walk, or an accessible elevator as possible. (3)(a)2.

7. Approximate proximity of reserved space(s) to a main entrance ______ feet.

8. Parking lot surface hard and adequate for wheelchair use.

9. Wheeling or walking to building entrance should not necessitate danger from car or truck traffic.

10. Curbs should not limit access to walkways.

11. Reserved spaces should include end spaces.

12. Parking should not necessitate wheeling or walking behind parked cars.

13. Parking spaces should be distributed consistent with frequency and persistency of parking needs.

14. Parking should be available where left side of car opens to the sidewalk (curbs would then not have to be eliminated).

Figure II-3: Sample Section of the Architectural
Barrier Checklist Guide

Parking Lot

Location ______________________________

	Discrepancy Scale				Comments
	Major	Minor	No	NA	
	1	2	3		
*1. Spaces: A. Number reserved (2% required) _______					
B. Total number _______					
*2. Space width (12 ft. minimum)					
*3. Building access provided					
*4. Spaces identified by signs					
*5. Spaces close to accessible building entrance					
*6. Spaces in a parking ramp directly accessible					
7. Proximity of reserved spaces to accessible building entrance					
8. Parking lot surface appropriate					
9. Danger of access route to building entrance					
10. Access route to building entrance free of obstructions					

Comments:

Figure II-4: Sample Section of the Architectural Barrier Checklist

rated did not meet the full requirement of the standard but its use was not prohibited or it was close to meeting the standard's requirements. A check in the third column (weight 3) designated "No" discrepancy. The item being rated met the full requirements of the standard. A check in the fourth column (weight 0) designated "NA" designated the standard was not applicable to the item being rated. The use of this type of scale was easy to use and gave results that were readily understandable for a large number of categories and standards.

A "Comments" column was also included in the checklist. This provided a format for factual justification of any rating and provided specific data to help clarify architectural barriers. The information generated by the checklist items (standards), the rating scale, and the "Comments" column gave useful data to the districts concerning what the standards were, to what degree their facilities met the standards, and what corrections (if any) were needed.

A cover sheet for the checklist was then designed to identify the VTAE district, date, campus/building visited, district representatives that this researcher contacted during the visitation, and other information essential for the checklist's use. This completed the architectural barrier checklist design (Appendix D). See Figure II-4 for a representative section. The checklist was then inserted into a notebook with individual pages being separated by tabbed divider sheets so that quick access was provided to any sheet at any time.

Validation

The checklist was considered valid for the following reasons: First, the standards that comprised it were almost all generated from commonly accepted reference sources. The standards added by this researcher were meant to clarify beyond basic accessibility. Secondly, this researcher compared the data generated by the checklist and that received from disabled persons in the districts. With very few exceptions, the instrument had provided this researcher with the same data as did the disabled person. This was not saying that the human element in evaluating facilities was not valuable. It suggested that factually valid information was collected in an objective way, but how this information related to individual human needs on a daily basis was not collected. The checklist collected data as it saw it at the moment of rating. The individual helped provide a picture of accessibility over a longer time frame along with how he personally related to the item or standard in question. Thirdly, this researcher's Education Specialist's Degree Advisory Committee reviewed the checklist and made suggestions concerning its format and content.

Piloting

The checklist was pilot tested at Vocational, Technical and Adult Education District 1 in Eau Claire. The process of walking through the campus building by building, floor by floor, suggested that several changes were needed. They were as follows:

A. Lengthened the "Comments" column on the checklist.

B. Added the interior/exterior section on the "Stairs" category.

C. Deleted "A sensing device to prevent premature closing" in the "Elevator" category.

D. Deleted the "Interior Circulation" category as such and distributed those standards in more appropriate categories.

E. Added 2.C(4) in the "Door" category: "Exterior door opens out, interior door opens out, clear space 84"." It was required by the Wisconsin Administrative Code but accidently deleted.

F. Standardized all categories listing exterior/interior so that exterior was on top.

G. Expanded the "Identification Summary" to include a section on exit signs.

H. Added a section in the "Entrances," "Restrooms," "Water Fountains," "Parking Spaces," and "Public Telephones" categories to denote their identification with a sign noting their accessibility (if appropriate).

I. Changed "Telephones" to "Public Telephones" in the "Identification Summary."

J. Added D under "Interior Identification" which states "Room or area function identified." This was added with a blind person in mind. It would be easier for him to identify shop areas, laboratories, and other specific areas (other than general purpose classrooms) if he could read more than just a room number.

The above corrections were then made and the final copy of the checklist and checklist guide were typed and reproduced.

Reliability

Reliability data were collected in the following manner:

A. A second person accompanied this researcher while pilot testing the checklist. This person received a briefing about the checklist, its function and categories.

B. The checklists were completed separately during a tour of the VTAE District 1 campus.

C. After returning from the visitation, the ratings of the two checklists were compared in each category. The correlation ratio was .73 for the checklist. This signified a good degree of correlation. This researcher suggested that this figure was typically low because of the inexperience and non-familiarity of the other person with checklists and architectural barriers and the short duration of the briefing period.

Data Collection Procedure

The data collection procedure was as follows:

A. Tentative visitation dates were scheduled to allow several districts to be visited in the same geographical area during one trip.

B. The district director or his appointed contact person was called by telephone to introduce this researcher and the project and to ask for the district's cooperation and set a visitation date and time. In the majority of cases, the tentative date was confirmed.

C. On the appointed date, this researcher met with the district director or his designated contact person. The following topics were generally discussed:

1. The reason for the project and the value of the data.
2. The checklist, checklist guide, OSHA regulations and Wisconsin Administrative Code were discussed to the extent desired by district personnel.
3. Confidentiality of the data collected.
4. All data collected would be xeroxed and returned to them for their use and information.
5. A list of "Major Assets" and "Suggestions for Improving Accessibility" would accompany the xeroxed checklist so that they would have knowledge of the checklist's major findings concerning their district.
6. The district's past efforts at improving accessibility, its present status and future plans.
7. The method the researcher wanted to use to tour the campus. This generally took the form of the researcher and an appointed district person making the tour as a team with each person relaying information to the other to assure understanding of the position of the physically disabled person and of the district. In a few districts, the researcher toured the campus alone and returned to the district person's office for a talk after the

tour. This method was not preferred since the continual communication exchange which was part of the team approach seemed more enlightening to both parties.

8. The information collected would represent the accessibility of their district on the day of the visitation. The data collected on the several districts involved in building projects or planning building projects would inaccurately represent their accessibility upon completion of the construction. This was particularly true of the Blackhawk, Moraine Park and Indianhead Districts.

D. During the evening hours of the day of the campus tour, this researcher reviewed the checklist sheets which had been used, wrote a letter to the district thanking them for their cooperation and developed the list of "Major Assets" and "Suggestions for Improving Accessibility."

E. Upon return to the office, the letter and two lists were typed and a copy of the checklist sheets which were used during the visitation were xeroxed and returned to the district for their information and use.

F. This researcher asked the districts to request clarification if they had questions concerning the visitation or the information returned to them.

Data Analysis

The first step in the data analysis was to compile the information gathered from all the districts and put it into one checklist. This meant that this researcher had to make judgmental decisions concerning a district's "average" accessibility on any one standard. From this one source, then, came information concerning the accessibility of the VTAE system as a whole.

From this composite of information, the VTAE System's most frequently encountered architectural barriers were determined. This list was divided into two sections. The criteria used to select the architectural barrier standards to be included in the first section were:

A. Less than half of the districts meet the standard.

B. No standard was considered unless it was taken from the Wisconsin Administrative Code or OSHA.

The criteria used to select the architectural barrier standards to be included in the second section were:

A. Less than half of the districts meet the standard.

B. The standard's source had to be other than the Wisconsin Administrative Code or OSHA.

These two sections were used as the basis for the "Most Frequent Barriers" list in the pamphlet entitled "Checklist for 14 Common Barriers to the Physically Disabled in Vocational and Technical Education Facilities." (Appendix E)

Another method used to analyze the data was to use the checklist as a source from which to extract a list of critical standards for each of the physical disability areas (non-ambulatory, semi-ambulatory, sight impaired, hearing impaired and incoordinated). The visitation data was then referred to to determine which districts met the standard in question. As each critical standard which applied to, say non-ambulent persons, was referred to, the names of the districts which met the standard were jotted down. When the list of applicable standards had all been analyzed, the districts whose names appeared most frequently were considered to be the most appropriate districts to provide educational programs for the disability group in question.

A list of basic architectural barrier considerations for all disability groups was compiled. This was an attempt to state in broad terms, those areas critical to general VTAE facility accessibility.

It should be noted, also, that the standards contained in the sources of information used by this project were meant to be seen as a minimum standard. Certainly, the preferred standards go beyond these and take into consideration such things as attitude toward the disabled, willingness to overcome unique individual difficulties, program design and scheduling, willingness to provide supportive personnel, provision of accessible study carrels and other working surfaces, and so forth.

Chapter III

Results

Introduction

Chapter III will follow the general format:

A. A project objective will be given.

B. A discussion of the results related to the stated objective will follow.

Objective 1: Develop a checklist to determine architectural barriers based upon the American Institute of Architects recommendations and complete one checklist for all VTAE Districts.

A checklist (Appendix D) was designed to determine the architectural barriers which presently exist in Wisconsin's VTAE System (please refer to Chapter II for the details of its development). During the VTAE District visitations, the checklist proved to be both functional and easily used. A copy of the checklist was reviewed by Mr. Chris Kellogg of the Wisconsin Board of Vocational, Technical and Adult Education without major criticism.

Objective 2: Determine the presently existing architectural barriers for each VTAE District campus. A sample architectural barrier would include building entrances and exits, elevators (if a multi-story building), fire escapes, restroom facilities, interior doors, ramps and corridors.

The architectural barriers were determined during the visitation of a campus in each district. After the visit, a letter thanking them for their cooperation was sent to each district, along with two lists that stated what this researcher felt to be their "Major Assets" and "Suggestions for Improving Accessibility."

It will be noted that the district totals on the standards (for instance, numbers 1 and 2 under Parking Lot) were not consistent. This inconsistency was caused by the non-applicability of some standards to some districts. For instance, the standard which suggests a 12 foot minimum width for a reserved parking space for the physically disabled would not be applicable to a district that has no reserved spaces. Another example where no data would be collected on parking lots would be the main Madison Area Technical College campus where the parking area was not owned by the college. Also, a facility which has no multi-story buildings did not generate data relative to elevators.

Table III-1 suggested that an inadequate amount of districts had a sufficient quantity of reserved parking spaces and of those spaces which were reserved, most were of insufficient width. Most reserved parking spaces were identified by appropriate signs and were located sufficiently close to an accessible building entrance. As to the parking lot itself, all surfaces were appropriate for wheelchair travel, there was little danger to building entrances, and they were free of obstructions.

Table III-1

Summary of Parking Lot Barriers

	Architectural Elements	Discrepancy Scale			
		Major	Minor	No	NA
*1.	Spaces: A. Number reserved (2%) required) ______	#			
	B. Total number ______	11	3	3	
*2.	Space width (12 ft. minimum)	9		6	2
*3.	Building access provided	1		15	1
*4.	Spaces identified by signs	3	1	11	2
*5.	Spaces close to accessible building entrances.	1	2	14	
*6.	Spaces in a parking ramp directly accessible			1	16
7.	Proximity of reserved spaces to accessible building entrance.	1	2	13	1
8.	Parking lot surface appropriate.			17	
9.	Danger of access route to building entrance.	1	3	10	4
10.	Access route to building entrance free of obstructions	1	1	14	1

# Number of VTAE Campuses

This would imply that the needs of the physically disabled persons were not being adequately met in some districts in regards to being able to find a parking space, park, get out, and travel into the building. It was also noted by this researcher that the reserved parking spaces were not always easily located by persons unfamiliar with the district campus.

Table III-2 indicated that all district's walks were sufficiently wide and had a non-slip surface. There were two districts where walks were too steep to be used by persons in wheelchairs, especially in the winter. Also, those steep walks did not have any rest stops. The buildings at three districts were not interconnected by accessible walks. This suggested the inability of persons in wheelchairs to use all buildings on these campuses.

Table III-2

Summary of Walk Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Width (48" minimum).			# 17	
*2. Gradient (5% maximum).		2	15	
*3. Non-slip surface			17	
*4. Gratings:				
*A. Opening width (3/8" maximum).				
*B. Perpendicular to direction of travel. . .				
*5. Access of multiple buildings through walks or enclosed passageways.	2	1	12	2
6. Rest stops for long walks (60-ft. intervals maximum)	2		1	14

# Number of VTAE Campuses

It appeared that some districts would be less appropriate for use by persons in wheelchairs than others and that future building and construction projects should take these factors into consideration.

Table III-3 gave evidence that all but three districts have accessible entrances to the majority of its buildings. The identification of the accessibility of accesible entrances was lacking in all districts. Four districts had insufficient accessible exits in case of emergencies.

Table III-3

Summary of Entrance Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Is one primary entrance accessible.	# 3		14	
*2. Identification:				
*A. If accessible, its accessibility must be identified by a sign	14			3
*B. If not accessible, the nearest accessible entrance must be identified.	14			3
*C. At all entrances, location of nearest accessible restroom must be located. . .	14			3
*D. To be legible from adjacent streets, driveways, or public walks				17
*3. 60" x 60" level interior floor and exterior walk at all entrances	2	1	14	
*4. Thresholds:				
*A. Maximum height - 3/4".			16	1
*B. 4" minimum width			17	
*C. Beveled edge			17	
*5. Sufficient accessible exits in case of emergency	4		13	
*6. Is entrance accessible to an elevator (if applicable)			11	5
*7. Sturdy handrail on the steps, 30" to 32" high.				17

# Number of VTAE Campuses

This data concludes that some districts were inaccessible to the physically disabled, especially for persons in wheelchairs. This inaccessibility denied them use of these VTAE facilities and, consequently, of potential education opportunities. This also implied that the safety of some districts with respect to emergency exiting was inappropriate for the potential danger to life.

Table III-4 noted that all districts had audible warning signals, but only one had a visual signal (for deaf persons). Thirteen districts tended to have a sufficient quantity of accessible exits in case of emergencies. All districts had a sufficient number of exit signs. Most districts had a written emergency evacuation procedure of which the staff and students were informed. It appeared that less than half of the districts had given active consideration to the physically disabled persons in the evacuation procedure.

Table III-4

Summary of Emergency Readiness Barriers

	Discrepancy Scale			
Architectural Elements	Major	Minor	No	NA
1. Warning signals contain an audible component.	#		17	
2. Warning signals contain a visual component. .	16		1	
*3. Sufficient quantity of accessible exits . . .	4		13	
*4. Exit signs:				
*A. Present at each exit			17	
*B. 6" high - minimum.			17	
*C 3/4" wide letters - minimum.			17	
5. Staff informed about emergency evacuation routes.	2	1	14	
6. Students informed about emergency evacuation routes.	2	4	11	
7. The existence of a written emergency evacuation procedure.	3	2	12	
8. Do emergency evacuation procedures include considerations for the disabled person. . . .	7	2	1	

# Number of VTAE Campuses

According to this table, one district was, in terms of safety, the most appropriate district for deaf persons to attend. Safety, as a whole, was less adequate for the physically disabled than physically normal persons. This table seemed to confirm this researcher's visitation experiences that some districts did not seem to take sufficient active involvement in safety plans or practices, especially safety procedures concerning physically disabled persons.

Table III-5 suggested that where elevators were present, they served all levels intended for public use, they were all at least minimally accessible and there were no significant threshold problems. There was, however, a tendency for the control panels and emergency call systems to be mounted too high for usability. There was no raised lettering on the call buttons to promote elevator usability by blind persons. Some elevators were quite small, but all were big enough to promote at least minimal usability: in forwards and out backwards, or vice versa for wheelchairs.

Table III-5

Summary of Elevator Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Accessible at levels intended for public use.			# 13	4
*2. Wheelchair considerations:				
*A. Minimum 60" x 60" space for 360° turning		7	6	3
*B. Threshold:				
*(1) Height - 3/8" maximum.			13	4
*(2) Edge to be beveled			13	4
*C. Sensitive safety edge.		1	12	4
*3. Height to top of control panel (54" maximum). .	8	3	2	4
*4. Emergency call system accessible (54" maximum)	5	5	3	4
*5. Raised lettering on call buttons.	12			5
6. Sufficient space for usability.		6	7	4

# Number of VTAE Campuses

This implied that even where elevators existed, persons in wheelchairs had considerable difficulty in using them due to the high mounted control panels and emergency call systems. Presently, blind persons unfamiliar with the elevator or buildings require assistance to reach their destination. One district put raised numbers on the elevator doors at each level so that a blind person could always tell where he was without assistance.

Table III-6 indicated that the width of all exterior doors promoted usability by the physically disabled, that thresholds did not limit accessibility, and that the door handles were all acceptable. One district did have doors in a series that very seriously limited the independent accessibility of its buildings to persons in wheelchairs.

Table III-6

Summary of Exterior Door Barriers

	Discrepancy Scale			
Architectural Elements	Major	Minor	No	NA
*1. Door width:		#		
*A. Exterior - 40" minimum.		10	7	
*B. Interior - 32" minimum.				
*2. Type of door (check where appropriate):				
*A. Single leaf ______.				
*B. Double ______.				
*(1) Each door alone must provide accessibility				
*(2) Width:				
*(a) 32" minimum for an interior door.				
*(b) 40" minimum for an exterior door.				
*C. Series (inner and outer) ______.				
*(1) Exterior door opens out, interior door opens in, clear space 60".				
*(2) Exterior door opens in, interior door opens out, clear space 92".				
*(3) Exterior door opens in, interior door opens in, clear space 84".				
*(4) Exterior door opens out, interior door opens out, clear space 84".	1		5	11
*D. Automatic ______.				
E. Revolving (not accesible) ______.				
*3. Threshold:				
*A. Height - 3/8" interior, 3/4" exterior - maximum			17	
*B. Edges to be beveled			17	
*C. Width, 4" minimum, exterior			17	
*4. Maximum push-pull of 15 lbs. to open		1	16	
*5. Door handles:				
*A. Knurled to warn of hazardous areas.				
B. 42" high.			17	
C. Usable with a weak grip		1	16	
D. Non-slip surface.			17	
E. Knob type				
*F. Horizontal push bar (preferred)			17	
G. Push-Pull			17	
6. Door closers not to limit accessibility.				

# Number of VTAE Campuses

It appeared that, with one exception, exterior doors did not limit the usability of VTAE facilities for persons with physical disabilities.

Table III-7 gave evidence that the width of all interior doors, interior thresholds, and door handles promoted accessibility for all persons with physical disabilities. It was noted that all doors to boiler, electrical, maintenance, and other potentially hazardous rooms were kept locked. This was good safety procedure, especially for the blind person.

Table III-7

Summary of Interior Door Barriers

	Discrepancy Scale			
Architectural Elements	Major	Minor	No	NA
*1. Door width:				
*A. Exterior - 40" minimum			#	
*B. Interior - 32" minimum			17	
*2. Type of door (check where appropriate):				
*A. Single leaf ______.				
*B. Double ______.				
*(1) Each door alone must provide accessibility.				
*(2) Width:				
*(a) 32" minimum for an interior door				
*(b) 40" minimum for an exterior door				
*C. Series (inner and outer) ______.				
*(1) Exterior door opens out, interior door opens in, clear space 60".				
*(2) Exterior door opens in, interior door opens out, clear space 92".				
*(3) Exterior door opens in, interior door opens in, clear space 84".				
*(4) Exterior door opens out, interior door opens out, clear space 84".				
*D. Automatic ______.				
E. Revolving (not accessible) ______.				
*3. Threshold:				
*A. Height - 3/8" interior, 3/4" exterior - maximum			17	
*B. Edges to be beveled			17	
*C. Width, 4" minimum, exterior				
*4. Maximum push-pull of 15 lbs. to open			17	
*5. Door handles:				
*A. Knurled to warn of hazardous areas. . .			17	
B. 42" high.			17	
C. Usable with a weak grip			17	
D. Non-slip surface.			17	
E. Knob type			17	
*F. Horizontal push bar (preferred)				
G. Push-Pull				
6. Door closers not to limit accessibility. . .			17	

# Number of VTAE Campuses

This data concluded that the interior doors of all VTAE districts were usable by all physically disabled persons and that they promoted safety.

The data in Table III-8 indicated that the stair nosing in most districts was appropriate. Handrails and stair risers were of appropriate height and size, and stairs were of a non-slip finish.

Table III-8

Summary of Interior Stairs Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
1. Curved nosing.	# 4		11	2
*2. Handrails:				
*A. 32" high.		1	14	2
*B. 1-3/4" - 2" diameter oval or circular . .			15	2
3. Stairs risers:				
A. Interior - 7" maximum			15	2
B. Exterior - 5-3/4" maximum with 14" minimum width tread				
*4. Non-slip finish.		1	14	2

# Number of VTAE Campuses

According to the above table, the stairs in most districts were suitable for use by the physically disabled. Some persons, especially those with leg braces, canes, crutches, and so forth, were safer in some districts than in others due to the potential hazard of tripping on square-nosed or open stairs.

Table III-9 indicated that most districts did not have accessible water fountains and that the accessible water fountains were not identified as being accessible. Those water fountains which were inaccessible were typically mounted too high.

Table III-9

Summary of Water Fountain Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Accessibility	# 10	2	5	
A. Total number _____.				
B. Number accessible _____				
*2. Identification:				
*A. Accessibility identified.	8			9
*B. Sign 54"-66" high				17
*3. 30" high on floor-mounted coolers.	1			16
*4. Fully recessed models' accessibility				
*5. Accessibility of those in an alcove.				
6. 36" high on wall-mounted coolers	9		7	1

# Number of VTAE Campuses

Information in the above table implied that a person in a wheelchair was not able to get a drink of water in most district facilities, nor was an accessible water fountain easily identified.

The two interior ramps observed in VTAE facilities generally complied with the standards, with the exception of the height and existence of handrails. Neither had handrails.

Table III-10

Summary of Interior Ramp Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Slope:				
*A. 8.33% or 1:12, if height is greater than 36".		# 1	1	15
*B. 12.5% or 1:8 if height is less than 36" (interior only)				
*2. Handrails:				
*A. Height (30"-32")	1		1	15
*B. On both sides	2			15
*C. Maximum 4" of each side occupied by handrail.			1	16
*D. Intermediate rail for un-enclosed ramps.			1	16
E. Smooth.			1	16
F. Extend beyond top and bottom of ramp.				
*G. 1 1/2"-2" diameter round or oval.			1	16
*3. Non-skid surface			2	15
*4. Width (48" minimum).		1	1	15
*5. 72" straight bottom approach			2	15
*6. 48" x 60" rest and safety platform				
*A. 1:12 ramp at 30-foot intervals.				
*B. 1:8 ramp at 16-foot intervals (interior only)				
*7. 48" x 72" turning platform (72" minimum length).				
*8. No side slope.			2	15
*9. 60" level floor on inside and outside of ramp-door intersection			2	15
10. Wooden			1	16
11. Concrete			1	16
12. Protected from the elements (exterior only)				
A. Canopy.				
B. Automatic snow melting capacity				

# Number of VTAE Campuses

It appeared that interior ramps did not constitute a significant barrier to the accessibility of the VTAE System as a whole to persons with physical disabilities.

It was found that the slope of most exterior ramps was too steep and that handrails tended to be too high or non-existent (See Table III-11). With these exceptions, the exterior ramps tended to conform to the standards.

Table III-11

Summary of Exterior Ramp Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Slope:				
*A. 8.33% or 1:12, if height is greater than 36"	# 2		1	14
*B. 12.5% or 1:8 if height is less than 36" (interior only)				
*2. Handrails:				
*A. Height (30"-32")	2	1		14
*B. On both sides	3			14
*C. Maximum 4" of each side occupied by handrail				
*D. Intermediate rail for un-enclosed ramps		1		16
E. Smooth		1		16
F. Extend beyond top and bottom of ramp				
*G. 1 1/2"-2" diameter round or oval		1		16
*3. Non-skid surface		3		14
*4. Width (48" minimum)		1	2	14
*5. 72" straight bottom approach			3	14
*6. 48" x 60" rest and safety platform				
*A. 1:12 ramp at 30-ft. intervals				
*B. 1:8 ramp at 16-ft. intervals				
*7. 48" x 72" turning platform (72" minimum length)				
*8. No side slope			3	14
*9. 60" level floor on inside and outside of ramp-door intersection	1		2	14
10. Wooden				
11. Concrete			3	14
12. Protected from the elements (exterior only)				
A. Canopy				
B. Automatic snow melting capacity				

# Number of VTAE Campuses

This data concluded that the physically disabled, especially those in wheelchairs and during the winter months, had difficulty negotiating the VTAE System's exterior ramps safely and independently.

The data in Table III-12 indicated that all districts had men's restrooms which could be entered from the primary floor of its buildings; but that two districts had no accessible toilet stalls or there seemed to be a very inadequate number of them (such as only one building in three had accessible restrooms). All districts, except two, had accessible toilet stalls which were too short. All districts, except two, provided stall doors of the proper width and which swung out. All districts which had accessible toilet stalls provided grab bars that met all standards. Toilet seats were generally lower than the suggested standard and all districts had sufficient clearance between the floor and partitions. Only two districts identified their accessible restrooms as being accessible at the entrance and most restroom identification tended to use raised letters, be mounted on the door, and identify the function of the restroom ("Men's Restroom"). All districts had restrooms which were spacious enough to be used by physically disabled men. Most accessible restrooms contained lavatories which were not accessible. They tended to be too low for the arms of wheelchairs to slide under or of the foot-operated fountain type. Mirrors tended to be mounted too high for use by men in wheelchairs, as were the towel and soap dispensers. The urinals, light switches, and door handles were all mounted at usable heights.

Table III-12

Summary of Men's Restroom Barriers

Architectural Elements	Discrepancy Scale Major	Minor	No	NA
*1. Is accessible on or from primary floor. . . .			17[#]	
*2. One toilet per restroom accessible:				
A. Number of restrooms _____.				
B. Number of accessible restrooms ______. .	2		15	
*3. Accessible toilets evenly distributed in building.	2	1	14	
*4. Entrance accessible			17	
*5. Toilet stall specifications:				
*A. 36" x 72" minimum size, or	15			2
*B. 48" x 57" minimum size			2	15
*C. Door:				
*(1) 32" wide minimum	2	1	13	1
*(2) Shall swing out.	2		14	1
*(3) 95° minimum opening arc.			14	3
*D. Grab bars:				
*(1) In "A" above:				
*(a) On each side of stall. . . .			13	4
*(b) 33" high		1	14	2
*(c) Parallel to floor.				
*(2) In "B" above:				
*(a) On wall nearest toilet . . .			2	15
*(b) 33" high			2	15
*(c) Parallel to floor.				
*(4) 1 1/2" clearance between grab bar and wall			15	2
*(5) Smooth			15	2
*(6) Support 250 lbs. minimum			15	2

Table III-12 (Cont'd.)

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*E. Toilet seat 20" from floor.		15	2	
*F. 12" clear space between partition and floor		17		
*6. Identification:				
*A. Accessibility identified.	12		2	3
*B. Sign 54"-66" high	5		8	4
*C. Raised letters and numbers used	1		11	5
D. On wall	12			5
E. Room or area function identified. . . .	1		12	4
*7. Restrooms sized for ease of access and usability.			17	
*8. Lavatories:				
*A. One accessible per restroom (29" clearance to apron bottom).	15		2	
*B. 34" rim height.			12	5
*C. Single lever water control.	1	6	5	5
*D. Insulated hot water pipes	2	1	2	12
*9. Mirrors' (when provided) bottom edge 40" high	8	4	5	
*10. Hand dryers and dispensers (when provided) 40" high	5	9	3	
11. Urinals:				
A. Wall-mounted, opening 19" high.		1		16
B. Floor-mounted, to be same level as floor			16	1
12. Light switch 54" high - maximum.			17	
13. Door handle 42" high			17	

# Number of VTAE Campuses

According to the preceding table, two districts were not appropriate for physically disabled men to attend. Because all districts, except two, had accessible toilet stalls which were too short, the door could not be closed when a wheelchair was inside. This tended to demean the physically disabled man to a position of no privacy for what might be very private and potentially embarrassing hygienic procedures (especially if a colostomy or similar situation was involved). Accessible restrooms were much easier to locate if signs that designated their accessibility were mounted on the wall at the entrance. The use of raised letters for restroom identification promoted readability for blind men. Signs mounted on walls instead of doors would reduce the hazard of outward swinging doors hitting blind persons while reading the signs. Identifying the function of the rooms (such as "Men's" or "Women's") helped to promote clarity and safety and reduce potential embarrassment of entering the wrong restroom, especially for blind men. There seemed to be a general tendency for restrooms to have an accessible toilet stall, but no accessible lavatory. Physically disabled men have had a very difficult (or impossible) task of maintaining an adequate state of cleanliness. The high-mounted mirrors and soap and towel dispensers tended to suggest that insufficient provisions had been made for total restroom accessibility needed by physically disabled men.

Table III-3 indicated that all districts have women's restrooms which can be entered from the primary floor of its buildings, but that two districts had no accessible toilet stalls or there seemed to be a very inadequate number of them (such as only one building in three had accessible restrooms). All districts, except two, had accessible toilet stalls which were too short. All districts, except two, provided stall doors which were the proper width and that swung out. All districts, except one, which had accessible toilet stalls provided grab bars that met all standards. Toilet seats were generally lower than the suggested standard and all districts had sufficient clearance between the floor and partitions. Only two districts identified their accessible restrooms at the entrance and most restroom identification tended to use raised letters, be mounted on the door, and identify the function of the restroom ("Women's Restroom"). All districts had restrooms which were spacious enough to be used by physically disabled women. Most accessible restrooms contained lavatories which were not accessible. They tended to be too low for the arms of wheelchairs to slide under or of the foot-operated fountain type. Mirrors tended to be mounted too high for use by women in wheelchairs as were the towel and soap dispensers. The light switches and door handles were all mounted at usable heights.

Table III-13

Summary of Women's Restroom Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Is accessible on or from primary floor. . . .			17[#]	
*2. One toilet per restroom accessible:				
A. Number of restrooms _____.				
B. Number of accessible restrooms ______. .	2		15	
*3. Accessible toilets evenly distributed in building.	2	1	14	
*4. Entrance accessible		1	16	
*5. Toilet stall specifications:				
*A. 36" x 72" minimum size, or	15			2
*B. 48" x 57" minimum size			2	15
*C. Door:				
*(1) 32" wide minimum	2	1	12	1
*(2) Shall swing out.	2		14	1
*(3) 95° minimum opening arc.			14	3
*D. Grab bars:				
*(1) In "A" above:				
*(a) On each side of stall. . . .	1		12	4
*(b) 33" high		2	10	5
*(c) Parallel to floor.		2	10	5
*(2) In "B" above:				
*(a) On wall nearest toilet . . .			2	15
*(b) 33" high			2	15
*(c) Parallel to floor.			2	15
*(3) 1"-2" outside diameter			15	2
*(4) 1 1/2" clearance between grab bar and wall			15	2
*(5) Smooth			15	2
*(6) Support 250 lbs. minimum			15	2

Table III-13 (Cont'd.)

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*E. Toilet seat 20" from floor.		15	2	
*F. 12" clear space between partition and floor		17		
*6. Identification:				
*A. Accessibility identified.	13		2	2
*B. Sign 54"-66" high	2		11	4
*C. Raised letters and numbers used	1		11	5
D. On wall	13			4
E. Room or area function identified.			13	4
*7. Restrooms sized for ease of access and usability.			17	
*8. Lavatories:				
*A. One accessible per restroom (29" clearance to apron bottom).	15		2	
*B. 34" rim height.			12	5
*C. Single lever water control.	1	6	5	5
*D. Insulated hot water pipes	2	1	3	11
*9. Mirrors' (when provided) bottom edge 40" high.	6	3	8	
*10. Hand dryers and dispensers (when provided) 40" high	4	8	5	
11. Urinals:				
A. Wall-mounted, opening 19" high.				17
B. Floor-mounted, to be same level as floor.				17
12. Light switch 54" high - maximum.			17	
13. Door handle 42" high			17	

Number of VTAE Campuses

It was found that two districts were not appropriate for physically disabled women to attend. Because all districts, except two, had accessible toilet stalls which were too short, the doors could not be closed when a wheelchair was inside. This tended to demean the physically disabled woman to a position of having no privacy for what might be very private and potentially embarrassing hygienic procedures (especially if a colostomy or similar situation was involved). Accessible restrooms were much easier to locate if signs that designated their accessibility were mounted on the wall at the entrance. The use of raised letters for restroom identification promoted readability for blind women. Signs mounted on walls instead of doors would reduce the hazard of outward swinging doors hitting blind women while reading the signs. Identifying the function of rooms (such as "Men's" or "Women's") helped to promote clarity and safety and reduce potential embarrassment of entering the wrong restroom, especially for blind women. There seemed to be a general tendency for restrooms to have an accessible toilet stall, but no accessible lavatory. Physically disabled women have had a very difficult (or impossible) task of maintaining an adequate state of cleanliness. The high-mounted mirrors and soap and towel dispensers tended to suggest that insufficient provisions had been made for total restroom accessibility needed by the physically disabled women.

Only one district had a building where all the floors on a given story were not accessible (See Table III-14). The only grating which was noticed met the standards and all floors tended to be non-slip.

Table III-14

Summary of Floor Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. All floors on a given story to be accessible.	# 1		16	
*2. Gratings:				
*A. Maximum opening - 3/8" wide.			1	16
*B. Perpendicular to direction of travel . .			1	16
*3. Non-slip.		2	15	

Number of VTAE Campuses

The information in above table implied that the floors within the VTAE District's buildings tended to promote accessibility to all physically disabled persons.

According to Table III-15, only two districts provided public telephones that were accessible to the physically disabled. Neither of these two districts identified the public telephone's accessibility with a sign.

Table III-15

Summary of Public Telephone Barriers

	Discrepancy Scale			
Architectural Elements	Major	Minor	No	NA
*1. When provided, minimum of one accessible:	#			
A. Number of locations provided ______.				
B. Number of locations accessible ______ . .	15		2	
*2. Dial 48" maximum height	14		2	1
*3. Coin slot 54" maximum height.	13	1	3	
*4. Adjustable volume control (where appropriate)				
*5. Identification:				
*A. Accessibility identified	2			15
*B. Sign 54"-66" high.				
6. Hinged seat 17" high when down.				
7. If booth, 25" wide minimum with seat folded up	2			15

Number of VTAE Campuses

The information in the above table seemed to indicate that, except for the two districts which provided accessible public telephones, the only way presently available for a physically disabled person (especially if confined to a wheelchair) to make a telephone call was to use an office telephone. This method, while often less costly, did not allow the physically disabled person to make a telephone call if the offices were locked up (especially at night).

According to Table III-16, the use of signs to designate the accessibility of accessible building entrances, restrooms, water fountains, and public telephones was almost non-existent. Signs were generally used to designate reserved parking spaces. There were no exterior signs at inaccessible building entrances locating the nearest accessible entrance. There were no exterior signs at any entrances locating the nearest accessible restroom. Interior signs tended to use raised numbers and letters, to be mounted at an incorrect height, to be mounted on doors (instead of on walls), and not to identify the function of the room or area in question (such as "Machine Shop"). No knurled hardware was noticed but doors to all hazardous areas were locked. All exit signs were appropriate in number, location and design.

Table III-16

Summary of Identification Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Interior signs designating accessibility:	#			
*A. Located at all accessible:				
*(1) Restrooms.	13	1	2	1
*(2) Water fountains.	10			7
*(3) Public telephones.	2			15
*B. Mounted 54"-66" high				17
C. Mounted on the wall.				17
*2. Interior signs providing identification:				
*A. Raised letters and numbers to be used. .	3	1	13	
*B. Mounted 54" to 66" high.	8	4	5	
C. Mounted on the wall.	11	4	2	
D. Designates room or area function	8	5	4	
*3. An exterior sign:				
*A. At all accessible entrances, designating their accessibility.	15			2
*B. At all inaccessible entrances, designating the nearest accessible entrance	13			4
*C. At all entrances locating the nearest accessible restroom.	15			2
*D. To be legible from adjacent streets, driveways or public walks.				17
*E. To identify reserved parking spaces. . .				
*4. Knurled hardware used on doors to hazardous areas			17	
*5. Exit signs:				
*A. Present at each exit			17	
*B. 6" high - minimum.			17	
*C. 3/4" wide letters - minimum.			17	

Number of VTAE Campuses

Signs used to identify the accessibility of a building entrance, restroom, water fountain, parking space, or public telephone are to provide ease of location. Such steps had not yet been taken by the VTAE districts with the partial exception of signs which designated parking spaces (such signs should specifically indicate their use Only by disabled persons and the reservation of spaces should not be limited to special arrangements between a disabled person and the school and, thereby, fail to provide disabled visitors parking spaces). The marking of each building entrance with a sign either designating its accessibility or locating the nearest accessible entrance was intended to assist physically disabled persons to determine where they can enter the building. An exterior sign designating the nearest accessible restroom was intended to promote the functional identification and usage of restroom facilities. Interior signs tended to be readable by blind persons since most districts used raised letters and numbers, although identification signs were commonly of several types even within the same building. Those districts which used this type of identification were, in this respect, the most appropriate for blind persons to attend. Mounting signs at certain heights was an attempt to standardize their location so that blind persons had some knowledge of where they could be located. It was also suggested that signs be mounted on the wall to minimize the hazard of blind persons being hit by a door while attempting to read a sign mounted on it. The identification of the function of a room or area was intended to help decrease confusion of the blind. The sign "Machine Shop - 219" was more informative than "219" alone. This method of identification was not needed for a general purpose classroom. This method of identification also helped promote safety for blind persons by telling them not to enter certain potentially dangerous areas (such as a machine shop).

Objective 3: Determine the existing architectural and equipment barriers in classrooms, laboratories, learning centers, media resource centers, food service areas, and recreation areas on one campus in each VTAE District.

Study carrels, tables and other working surfaces now available did not provide enough clearance between the floor and its underneath side (29"-30") to allow the arms of a wheelchair to slide under and, thereby, permit the person in the wheelchair to get as close to the edge as possible. Providing this extra clearance required that the height of the working surface be raised higher than normal. Some persons in wheelchairs suggested that they would rather not be able to slide under the table and have a lower working surface. Others suggested that being able to slide under the table and getting as close as possible to the edge was preferable. The choice seemed to be highly individual.

Table III-17 indicated there was no consistent method of identifying media resource centers. Some districts had no identification and were represented in the NA column. Media resource centers had doors of sufficient width to enter, an appropriate threshold and a light switch which could be reached. There were no districts which provided sufficient accessible study carrels for use by the physically disabled. The aisles between book shelves tended to be wide enough to permit the passage of a wheelchair. Card files, shelved and resource materials and A-V equipment tended to be accessible either in their storage areas or by assistance from librarians or media specialists.

Table III-17

Summary of Media Resource Center Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. If identified by a sign:	#			
*A. Raised letters and numbers.	2		7	8
*B. 54"-66" high.	3	1	5	8
C. On wall	6		2	9
D. Room or area function identified.	1		8	8
*2. Door width (32" minimum)			14	3
*3. Entrance accessible.			15	2
*4. Threshold:				
*A. Height - 3/8" - maximum			14	3
*B. Edge to be beveled.			14	3
5. Light switch 54" high - maximum.			15	2
6. Study Carrels:				
A. 1% accessible	14			3
B. 32" wide.			14	3
C. 30" clearance from floor.	14			3
7. Aisles between book shelves - minimum 36" wide	1	1	13	2
8. Tables: 30" clearance from floor.	14		1	2
9. Card files accessible.			15	2
10. Accessibility to all shelved materials			15	2
11. A-V equipment accessibility.		1	11	5
12. Resource material accessibility.			15	2

# Number of VTAE Campuses

It was found that media resource centers were generally usable by physically disabled persons with the exception of study carrels and tables. One district provided one accessible study carrel. Identification could be improved to promote clarity and functionality, especially for the blind.

There was no consistent method of identifying learning centers (see Table III-18). Some districts had no identification and were represented in the NA column. Learning centers had doors of sufficient width to enter, were accessible, had an appropriate threshold and had a usable light switch. Study carrels and tables were too low for wheelchair accessibility. Aisles tended to be wide enough to be used by person in a wheelchair.

Table III-18

Summary of Learning Center Barriers

		Discrepancy Scale			
	Architectural Elements	Major	Minor	No	NA
*1.	If identified by a sign:			#	
	*A. Raised letters and numbers			5	12
	*B. 54"-66" high	1		4	12
	C. On wall	5			12
	D. Room or area function identified	4		1	12
*2.	Door width (32" minimum)			8	9
*3.	Entrance accessible			9	8
*4.	Threshold:				
	*A. Height - 3/8" - maximum			6	11
	*B. Edge to be beveled			6	11
5.	Light switch 54" high - maximum			9	8
6.	Study carrels:				
	A. 1% accessible	8		1	8
	B. 32" wide			9	8
	C. 30" clearance from floor	8	1		8
7.	Aisles between book shelves - minimum 36" wide		1	4	12
8.	Tables: 30" clearance from floor	7			12
9.	Card files accessible			2	15
10.	Accessibility to all shelved materials	1		5	11
11.	A-V equipment accessibility	2	1	5	9
12.	Resource material accessibility			7	10

# Number of VTAE Campuses

The above table indicated that learning centers were generally usable by physically disabled persons with the exception of the study carrels and tables. Identification could be improved to promote clarity and functionality, especially for the blind.

There was an inconsistent identification method of physical education areas according to Table III-19. These areas could be entered but none of them had been planned with the physically disabled in mind. There was generally no accessible lavatory or toilet. The shower facilities were of the open room type with no place to sit down except in the wheelchair. The water controls, water spray and soap trays were generally inaccessible. Aisles were generally wide enough to be used by persons in wheelchairs.

Table III-19

Summary of Physical Education Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. If identified by a sign:	#			
*A. Raised letters and numbers.	1		2	14
*B. 54"-66" high.	1		2	14
C. On wall	3			14
D. Room or area function identified.			3	14
*2. Door width (32" minimum)			3	14
*3. Access to physical education locker area . . .			3	14
*4. Threshold:				
*A. Height - 3/8" - maximum			3	14
*B. Edge to be beveled.			3	14
*5. Accessible toilet facilities	3			14
*6. Lavatories:				
*A. Number accessible - (1 minimum)	2		1	14
*B. 29" clearance	2		1	14
*C. 34" rim height.			3	14
*7. If mirror, 40" to bottom edge.	1		2	14
*8. Hand dryers and dispensers (when provided) 40" high	1	2		14
9. Light switch 54" high - maximum.	1		1	15
10. Locker accessibility (1% minimum).			3	14
11. Shower stall accessibility:				
A. Number accessible (2 minimum)				
B. Non-slip floor.		1		16
C. 36" x 36" stall - minimum				
D. 2" high shower curb (maximum)				
E. Shower seat:				
(1) 19" high.	1			16
(2) On left hand wall in one shower, right hand wall in the other. . .				
(3) Hinged to fold against wall				

Table III-19 (Cont'd.)

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
F. Grab bar attached to opposite (of seat) and back wall.				
12. To be accessible in shower stall:				
A. Water control (42" high)	1	1		15
B. Diversionary shower spray (42" high) . .	1			16
C. Soap tray (42" high)	1		1	15
13. Aisles at least 36" wide to:				
A. Lockers.	1		2	14
B. Showers.			3	14
C. Toilets.			3	14
D. Lavatories			3	14
*14. 60" x 60" turning space			[illegible]	14
*15. Accessibility to physical education activities, rooms, and special areas.			3	14

Number of VTAE Campuses

This seemed to indicate that physically disabled persons, especially those in wheelchairs, had very limited use of the physical education locker room area. It was appropriate for changing clothes but not for showering or even using the toilet facilities.

Table III-20 suggested that the spectator sports arenas which exist in the VTAE Districts promoted accessibility of physically disabled persons.

Table III-20

Summary of Spectator Sports Arena Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
1. Accessibility of building, field or arena. . .			# 1	16
2. Accessible spaces:				
A. 1% minimum			1	16
B. Easy access to exits			1	16
C. All to be level.			1	16

Number of VTAE Campuses

According to Table III-21, most laboratories were not identified with signs containing raised numbers and letters. Also, these signs were not typically mounted at the correct height, were most commonly mounted on the door instead of the wall, and usually did not identify the function of the laboratory (such as "Electronics"). The laboratories could be entered in all districts and there was no hindrance at the entry by the threshold. This table confirmed this researcher's memory that in no laboratory was there noticed a work station or table which was designed specifically for use by a physically disabled person. Typically, all aisles and light switches were usable by the physically disabled person.

Table III-21

Summary of Laboratory Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. If identified by a sign:	#			
*A. Raised letters and numbers.	3		13	1
*B. 54"-66" high.	9		7	1
C. On wall	13		3	1
D. Room or area function identified.	9		7	1
*2. Door width (32" minimum)			17	
*3. Access to laboratory		1	16	
*4. Threshold:				
*A. Height - 3/8" maximum			17	
*B. Edge to be beveled.			17	
5. Work stations:				
A. If 24 stations exist, 1% or at least one to be accessible.	17			
B. Low enough to be usable			9	8
C. 30" minimum clearance from floor.	12			5
D. No apron.			2	15
6. 36" minimum aisles			16	1
7. Light switch 54" high - maximum.			17	

Number of VTAE Campuses

It was found that the blind were going to have particular difficulty in identifying where they were or what room they were in unless more functional laboratory identification was used. This suggested also that special arrangements were going to be necessary on an individual basis for disabled persons who need to use laboratories since, at this time, no tables or work stations were accessible (except by coincidence).

Identification signs for classrooms had raised letters and numbers, were not typically mounted at the correct height, were most commonly mounted on the door rather than the wall, and did not usually identify the room's function or purpose (see Table III-22). Classrooms in all districts could be entered easily without interference from the door's width or the threshold. The light switch was typically usable by physically disabled persons. The seating arrangements (whether tables or desks) did not presently promote accessibility, especially to persons in wheelchairs since they were too low for the arms of a wheelchair to slide under. All classrooms had sufficient level floor space in an optional viewing area to accommodate persons in wheelchairs. There was sufficient aisle room for persons in wheelchairs in all classrooms.

Table III-22

Summary of Lecture Hall and Classroom Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. If identified by a sign:	#			
*A. Raised numbers and letters.	3		13	1
*B. 54"-66" high.	10		6	1
C. On wall	12		3	2
D. Room or area function identified. . . .	9		7	1
*2. Door width (32" minimum)			17	
*3. Access of lecture hall or classroom.			17	
*4. Threshold:				
*A. Height - 3/8" maximum			17	
*B. Beveled edge.			17	
5. Light switch 54" high - maximum.			17	
6. Seating:				
A. 30" clearance from floor.	17			
B. Is the floor level.			17	
C. In an optimum viewing area.			17	
7. 36" minimum between fixed equipment.			17	

# Number of VTAE Campuses

This indicated that all classrooms in the VTAE System were usable by physically disabled persons if appropriate accessible seating arrangements could be initiated on an individual basis. Using appropriate identification would also aid the blind person to travel more confidently and safely.

According to Table III-23, the identification of food service areas was very inconsistent and, many times, non-existent (in the NA column). All food serivce areas could be entered easily through the same entrances used by all other students. Only two districts furnished tables accessible to wheelchairs. Typically, there was sufficient inter-table space to promote accessibility. All tray slides and tray slide aisles promoted accessibility.

Table III-23

Summary of Food Service Area Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. Identified by a sign:	#			
*A. Raised numbers and letters.	2		3	12
*B. 54"-66" high.	2	2	1	12
C. On wall	4		1	12
D. Room or area function identified. . . .	1		4	12
*2. Door width (32" minimum)			10	7
*3. Access of dining area.			16	1
*4. Threshold:				
*A. Height - 3/8" maximum			12	5
*B. Edge to be beveled.			12	5
5. Direct accessibility to dining area.			16	1
6. Tables:				
A. 30" clearance from floor.	14		2	1
B. 66" minimum between tables.	1	2	13	1
7. 34" high slide tray rail height.			10	7
8. 34" wide aisle between tray slides and control railings			6	11

# Number of VTAE Campuses

The lack of identification did not seem to promote clarity and direction, especially for blind persons. The food service areas were usable by all physically disabled persons. There were difficulties arising from the typical absence of accessible tables. Such difficulties could be rectified on an individual basis.

Table III-24 indicated that identification, when present, had raised letters and numbers, was mounted at the correct height, was typically mounted on the door rather than on the wall, and the room's function ("recreation area") was given. All doors promoted accessibility but two districts had recreation areas where accessibility was restricted to persons not in wheelchairs. Thresholds did not limit accessibility. The games available in recreation areas were typically accessible to persons with physical disabilities. Table heights did not allow the arms of wheelchairs to slide underneath and, therefore, did not promote accessibility. There was sufficient level floor space in optimal viewing areas for persons in wheelchairs.

Table III-24

Summary of Recreation Area Barriers

Architectural Elements	Discrepancy Scale			
	Major	Minor	No	NA
*1. If identified by a sign:	#			
*A. Raised letters and numbers	1		5	11
*B. 54"-66" high	1	1	4	11
C. On wall	5		1	11
D. Room or area function identified	1		5	11
*2. Door width (32" minimum)			9	8
*3. Accessibility to recreation area	2		11	4
*4. Threshold:				
*A. Height - 3/8" maximum			12	5
*B. Edge to be beveled			12	5
5. 36" aisles			10	7
6. Accessibility of games	1	1	10	5
7. Tables: 30" clearance from floor	7		1	9
8. Seating:				
A. Is the floor level			13	4
B. In an optimum viewing area			13	4

# Number of VTAE Campuses

This seemed to indicate that, while the identification did not promote accessibility for the blind (since most recreation areas were not identified with a sign), these recreation areas could be used in most districts without any problems by all physically disabled persons.

Most Common Architectural Barrier Deviations from the OSHA and Wisconsin Administrative Code Standards

The criteria used to draw the following conclusions from the checklist were:

A. Less than half the districts meet the standard.

B. The standards listed were restricted to those found in the Wisconsin Administrative Code or OSHA.

Parking Lot

A. The number of parking spaces reserved for the disabled was insufficient.

B. Space width was too narrow.

Entrances

A. Accessible entrances were not identified by an exterior sign as being accessible.

B. Inaccessible entrances did not have a sign indicating the location of the nearest accessible entrance.

C. No entrances identified the location of the nearest accessible restroom.

Elevators

A. Control panels were too high.

B. Emergency call systems were too high.

C. Call buttons did not have raised letters or numbers.

Doors

A. Exterior doors tended to be of insufficient width (were 36" rather than 40").

Water Fountains

A. Water fountains tended to be mounted too high.

B. Those accessible were not identified by a sign as being so.

Restrooms

A. Toilet stalls were too short to close the door with a wheelchair inside - no privacy.

B. Accessible restrooms were not identified by a sign at the entrances as being accessible.

C. Lavatories tended to be inaccessible because they were mounted too low for the arms of a wheelchair to slide under or were of the foot-operated fountain type which could not be used by persons in wheelchairs.

D. Mirrors tended to be mounted too high for use.

E. Hand towel, soap, and other dispensers tended to be mounted too high for use.

Public Telephones

A. Accessible public telephones were not provided where others were. Wall-mounted telephones were too high for use by physically disabled persons.

B. Accessible public telephones were not identified by a sign indicating their accessibility.

Identification

A. Signs did not designate the accessibility of accessible:

1. Restrooms
2. Water fountains
3. Public telephones

B. Interior signs tended to be mounted at incorrect heights

C. Exterior signs:

1. Did not designate the accessibility of accessible building entrances.
2. Did not designate the nearest accessible entrance at inaccessible entrances.
3. Did not locate accessible restrooms at all entrances.

Most Common Architectural Barrier Deviations from Non-OSHA and Non-Wisconsin Code Standards

This section reflects the movement from the minimum standards required by law (OSHA and the Wisconsin Code) to the preferred standards.

The criteria used to draw conclusions from the checklist were:

A. Less than half the districts meet the standard.

B. The standards listed were limited to those coming from sources other than the Wisconsin Administrative Code and OSHA.

Restrooms, Media Resource Centers, Learning Centers, Laboratories and Classrooms

A. Identification was on the door rather than on the wall. Signs mounted on the wall minimized the hazard of a blind person being hit by the door while reading the sign.

B. Identification by a sign of room or area function helped promote readability and clarity and decrease confusion, especially for blind persons. For instance, "321 - Drafting" was more descriptive than "321" alone. If classrooms were general and multi-use, then the room number alone was sufficient.

Objective 4: Develop a checklist/rating scale which can be utilized to determine the campus modifications required to offer programs for persons with mobility limitations.

The Wisconsin Administrative Code, OSHA extractions, checklist guide and checklist (see Appendices A, B, C and D) were used to determine what architectural barriers (and consequently, the needed modifications) existed in each VTAE District. Additional helpful information sources were listed in the references. This researcher believed that these resources, along with the active involvement of local physically disabled persons or special interest groups, would provide a sound basis for this type of decision-making in the future.

The checklist was designed to be used by a wide variety of persons: architects, builders, administrators, interest groups, and so forth. This researcher used a three-ring notebook to hold the checklist during visits. Each of the pages was separated by tab dividers marked according to the section of the checklist under it (Parking Lot, Water Fountain, and so forth). This allowed any section of the checklist to be easily located and used. Several copies of each checklist page were placed in the notebook. This researcher started at the top of a building and worked, floor by floor, to the bottom, covering each floor completely while there. This minimized back-tracking and the length of time it took to complete the checklist.

To determine the impact of these architectural barriers in relation to providing services to physically disabled persons, a list of critical standards was compiled for each of the physical disability groups. The checklist was then reviewed to see which districts met or exceeded these critical standards (a "No" rating on the Discrepancy Scale). The districts which met or exceeded the highest number of critical standards were considered the most fully prepared to meet the needs of the particular physical disability group in question at this time. This, however, did not suggest that those districts mentioned fully met all of these specific standards, nor standards not considered here. The accessibility of all districts could be increased. The conclusions drawn by this researcher from this process were as follows:

Non-Ambulatory

Definition: Those individuals who, for all practical purposes, are bound to wheelchairs, regardless of cause.

Critical Considerations

A. Parking space of sufficient width.

B. Access to the building entrance.

C. Minimize the distance between a parking space and the building entrance.

D. Be able to enter the building independently.

E. Have an accessible restroom available (toilet, privacy, grab bars, lavatory, mirror, and dispensers).

F. Be able to get to all floors of the building intended for public use via an elevator.

G. Be able to get a drink of water.

H. Be able to enter all interior classrooms, library, food service area, laboratories, and so forth.

I. Sufficient accessible exits in case of emergency.

J. Emergency evacuation procedures should include considerations for the disabled person.

In Table III-25, it was noted that all districts had one or more major discrepancies relative to the above list. Those districts listed in the following table represent the half of the VTAE System which were the most accessible to non-ambulatory persons.

Table III-25

Presently the Most Accessible
Districts for Non-Ambulatory Persons

	No. of Standards Met or Exceeded
Madison Area Technical College*	20
VTAE District No. 1*	19
Northeast	18
Lakeshore	18
Gateway-Kenosha	18
Fox Valley	17
Mid-State	17
Western Wisconsin	17
Total Critical Standards	21

*Have the only toilet stalls which promote privacy for the non-ambulatory.

Semi-Ambulatory

Definition: Those individuals who walk with difficulty or insecurity, such as persons using braces and/or crutches, amputees, arthritics, spastics, pulmonary, and cardiac cases.

Critical Considerations

A. Be able to get to all floors of a building intended for public use via an elevator.

B. Have stairs which have rounded nosing with appropriate height riser and handrail. Minimize stairs to the extent possible.

C. Minimize inter-building or inter-classroom distances.

D. Grab bars in toilet stalls.

E. Minimize the distance between a parking space and the building entrance.

F. Sufficient accessible exits in case of emergency.

G. Emergency evacuation procedures should include considerations for the disabled person.

H. Non-slip floor surface.

Table III-26 indicated that three districts had no discrepancies in the above list and five districts had one major discrepancy. Those districts listed represent the half of the VTAE System which were the most accessible to semi-ambulatory persons.

Table III-26

Presently the Most Accessible
Districts for Semi-Ambulatory Persons

	No. of Standards Met or Exceeded
Northeast	11
Madison Area Technical College	11
Western Wisconsin	11
Gateway-Kenosha	10
Lakeshore	10
Mid-State	10
Waukesha County	10
Wisconsin Indianhead-Ashland	10
Total Critical Standards	11

Sight-Disabled

Definition: Those individuals who are totally blind and those whose sight is impaired to the extent that ambulation in public areas is insecure and hazardous.

Critical Considerations

A. Identification of laboratories, classrooms, and special purpose rooms in a manner that promoted readability:
   1. Raised numbers and letters.
   2. 54"-66" high.
   3. On the wall.
   4. Room or area function identified (when not a general use room).

B. Doors to all dangerous areas to be kept locked or have knurled handles.

C. Electrical outlet available to plug in a tape recorder in each classroom or laboratory in an appropriate location.

D. Identify elevator buttons with raised letters or numbers.

E. Sufficient accessible exits in case of emergency.

F. Emergency evacuation procedures should include considerations for the sight-disabled person.

Table III-27 listed those districts which represented the half of the VTAE System which were the most accessible to sight-disabled persons. It was noted that three major discrepancies existed even at the most accessible district.

Table III-27

Presently the Most Accessible
Districts for Sight-Disabled Persons

	No. of Standards Met or Exceeded
Gateway-Racine	7
Gateway-Kenosha	6
Fox Valley	6
Mid-State	6
Nicolet	6
Southwest	6
District No. 1	6
Waukesha County	6
Total Critical Standards	10

Incoordinated

Definition: Those individuals whose disabilities leave them with faulty incoordination or palsy from cerebral injury, spinal injury, or peripheral nerve injury.

Critical Considerations

A. Be able to get to all floors of a building intended for public use via an elevator.

B. Have stairs which have rounded nosing with appropriate height riser and handrail. Minimize stairs to the extent possible.

C. Minimize inter-building or inter-classroom distances.

D. Grab bars in toilet stalls.

E. Minimize the distance between a parking space and the building entrance.

F. Sufficient accessible exits in case of emergency.

G. Emergency evacuation procedures should include considerations for the disabled person.

H. Non-slip floor surface.

According to Table III-28, three districts had no discrepancies in the above list and five districts had one major discrepancy. Those districts listed represent the half of the VTAE System which were most accessible to incoordinated persons.

Table III-28

Presently the Most Accessible Districts for Incoordinates

	No. of Standards Met or Exceeded
Northeast	11
Madison Area Technical College	11
Western Wisconsin	11
Gateway-Kenosha	10
Lakeshore	10
Mid-State	10
Waukesha County	10
Wisconsin Indianhead-Ashland	10
Total Critical Standards	11

Hearing Disabled

Definition: Those individuals who are deaf or have a hearing disability to the extent that they might be insecure in major public areas or industrial situations because they are unable to communicate or to hear warning signals.

Critical Considerations

A. Visual emergency warning system.

B. Electrical outlet available to plug in a tape recorder in each classroom or laboratory at an appropriate location.

C. Seating in an area directly in front of the instructor to maximize lip reading.

D. Public telephones which have adjustable volume control.

E. Sufficient accessible exits in case of emergency.

F. Emergency evacuation procedures should include considerations for the physically disabled person.

Table III-29 showed that all districts had one or more major discrepancies in the above list. Those districts listed below represent the half (7) of the VTAE System which were the most accessible to hearing disabled persons.

Table III-29

Presently the Most Accessible Districts for Hearing Disabled Persons

	No. of Standards Met or Exceeded
Lakeshore*	6
Gateway-Racine	5
Gateway-Kenosha	5
Northeast	5
Madison Area Technical College	5
Waukesha County	5
Western Wisconsin	5
Total Critical Standards	7

*Lakeshore was the only VTAE facility that had a visual component in their emergency warning system for the deaf.

It seemed appropriate to suggest a list of basic considerations needed for physically disabled persons as a group if they were going to use VTAE District facilities. Following is a list of those necessary considerations.

Basic Architectural Barrier Considerations for all Disability Groups

A. An appropriate number of reserved parking spaces 12 feet in width.

B. Ability to approach and enter all buildings independently.

C. Have access to all floors intended for public use in all buildings.

D. Have access to all offices, classrooms, laboratories, shop areas, food service areas, recreation areas and learning and media resource centers.

E. An appropriate number of restroom facilities which provide entry, privacy and an accessible toilet, lavatory, mirror and appropriate dispensers in all buildings.

F. An appropriate number of accessible water fountains in all buildings.

G. An appropriate number of accessible public telephones in all buildings.

In conclusion, then, it was suggested that the results contained in this report were considered reliable at this point in time. These conclusions will change significantly in the next three years as districts continue in their promotion of accessibility through remodeling of existing facilities and in the planning of new buildings. The districts suggested after each disability group were those that most fully met the list of critical considerations listed, but did not take into consideration the help and individualized attention which may or may not be shown by these or other districts. The general architectural barrier considerations for all disability groups attempted to state in broad terms those areas critical to general VTAE facility accessibility.

Chapter IV

Recommendations

The following recommendations were made to all districts with consideration of their need to serve (at least minimally) a broad range of physically disabled persons.

It was suggested that all districts:

Parking Spaces

1. Provide an appropriate number of reserved parking spaces 12 feet wide that are as close as possible to an accessible building entrance.
2. Provide one reserved 12 foot parking space in the visitors parking lot or provide signs designating the location of the parking spaces reserved for the disabled so that disabled visitors will be able to find appropriate parking.
3. Have signs on campus roadways locating the reserved parking spaces for the physically disabled.
4. Use signs to identify reserved parking spaces for the physically disabled which indicate use by the disabled only (usable and can be located by the general public). These should not need to be reserved in advance.

Entrances

5. Provide for independent approach and entry of all buildings.

Elevators

6. Put raised lettering on elevator call buttons and on the doors of each floor for use by blind persons.
7. Lower the elevator control panels and emergency call systems to maximum height of 54".

Emergency Readiness

8. Provide an appropriate number of accessible exits (and entrances) in case of an emergency building evacuation. It is suggested that all buildings usable by the physically disabled have a minimum of two widely separated accessible exits.
9. Have written emergency evacuation procedures which are periodically reviewed and up-dated which contain specific considerations for the physically disabled person. Have all staff and students actively informed of these procedures.

10. Establish and maintain an active safety program including periodic fire drills and information dissemination to faculty and students.

Ramps

11. Equip all exterior and interior ramps (walks with more than a 5% gradient) with handrails of the correct height on both sides.

Restrooms

12. Provide at least one accessible restroom for each sex in each building. This would include:

    A. A toilet stall of sufficient size to insure privacy (being able to close the door) with a wheelchair inside (36" x 72" minimum).

    B. Grab bars in the toilet stall which meet minimum standards.

    C. One accessible lavatory.

    D. One accessible mirror.

    E. One accessible towel and soap dispenser.

    F. For women, one accessible sanitary napkin dispenser.

Water Fountains

13. Have an appropriate number of water fountains in each building accessible to the physically disabled (not higher than 36").

Floors

14. Provide access to all floors intended for public use in all buildings.

Public Telephones

15. Provide an appropriate number (minimum of one) of accessible public telephones (coin slot not higher than 54").

Identification

16. Provide interior signs designating accessibility:

    A. Located at all accessible:

        (1) Restrooms
        (2) Water fountains
        (3) Public Telephones

    B. Mounted 54" to 66" high.

C. Mounted on the wall.

17. Provide interior signs:

    A. Using raised letters and numbers.

    B. Mounted 54" to 66" high.

    C. Mounted on the wall.

    D. Designating room or area function (if it has a specific function, such as "Electronics").

18. Provide an exterior sign:

    A. At all accessible entrances designating their accessibility.

    B. At all inaccessible entrances designating the nearest accessible entrance.

    C. At all entrances locating the nearest accessible restroom.

    D. That is legible from adjacent streets, driveways or public walks.

    E. At all reserved parking spaces.

Laboratories, Classrooms, Food Service Areas, Learning and Media Resource Centers and Recreation Areas.

19. Provide working surfaces (desks, tables, study carrels, and so forth) appropriate to the individual needs of the physically disabled on an "as needed" basis.

General

20. Eliminate the architectural barriers identified during the visitation as well as others as they become known.

21. Use this checklist to survey campuses not visited by this project.

22. The districts designated as primary dispensers of services to any one of the five physical disability groups should promote maximum accessibility of that group. One of the means to accomplish that end would be to have no discrepancies in the standards listed in the critical considerations (see Chapter III).

23. The Wisconsin Board of Vocational, Technical and Adult Education should assign the responsibility and authority to a designated Board member to insure minimal district facility accessibility to all physical disability groups:

A. In all present facilities, taking into consideration accessibility changes inherent in future building programs involving new building, additions or remodeling which was already in progress.

B. In all plans for future building programs involving new buildings, additions or remodeling.

References

An Illustrated Handbook of the Handicapped Section of the North Carolina State Building Code, Department of Insurance, State of North Carolina, P. O. Box 26387, Raleigh, North Carolina 27611, September 1, 1973.

"Making Colleges and Universities Accessible to Handicapped Students" produced by the President's Committee on the Employment of the Handicapped, Washington, D.C., 1967.

"Making Facilities Accessible to the Physically Handicapped" produced by the State University Construction Fund, 194 Washington Avenue, Albany, New York, 12210, January, 1974.

"Occupational, Safety, and Health Act" (OSHA), Volume 39, Number 125, Part II, June 27, 1974.

"Requirements for Barrier-Free Environments," Wisconsin Administrative Code, Chapter 52, Section .04.

"Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped" produced by the American National Standards Institute, 1430 Broadway, New York, New York, 10018, 1971.

APPENDIX A

WISCONSIN ADMINISTRATIVE CODE
CHAPTER 52.04

(b) *Walks.* All walks leading to accessible entrances from parking facilities or public walks shall be at least 48 inches wide and shall have a gradient no more than 5%, and a nonslip surface with no side slope. Walks having a slope not greater than 2% may be constructed with a side slope, across the sidewalk, of one %. Walks with a gradient greater than 5% must conform to the requirements for ramps [Ind 52.04 (7)].

(c) *Communication between buildings or properties.* Walks or enclosed passageways which connect 2 or more properties or buildings and are intended for public use shall provide access to each building or property.

(4) NEW CONSTRUCTION. All new public buildings and places of employment shall be designed and constructed with means of ingress and egress, interior circulation, and toilet facilities in accordance with Table 52.04 and the requirements of subsection Ind 52.04 (4). All buildings with multiple uses shall comply with the criteria established in Table 52.04 for each specific use.

Note: The footnotes in Table 52.04 designate specific exemptions and/or requirements for means of ingress and egress, interior circulation and toilet facilities for the occupancies listed.

(a) *Means of ingress and egress.* Access from the exterior grade to the primary entrance and the entrance nearest any on-site parking facilities of all public buildings and places of employment shall be provided to the primary floor by means of a ramp, grade level entrance, or other accessible means approved by the department.

1. Platforms. A level platform, not less than 5 feet by 5 feet, shall be provided at the exterior and interior of all entrance doors. The platform shall be designed to provide at least 12 inches of clear space on the knob side of the door.

(b) *Interior circulation.* Access shall be provided to all public use areas of the building, both horizontally and vertically. Interior circulation between floor levels shall be accomplished by the use of ramps, elevators, approved chair lifts, or other accessible means approved by the department.

Note: The department recommends that the elevator control buttons and the emergency call system be accessible. Raised lettering is recommended for call buttons.

(c) *Toilet facilities.* Public toilet facilities shall be accessible on or from the primary floor. Every floor which is accessible, and which is provided with public toilet facilities, shall be provided with accessible toilet facilities which comply with the requirements of Ind 52.04 (8), and the following distribution:

1. The number of water closets provided shall be at the rate of 10% of the total number of water closets in each toilet room, with a minimum of one for each sex.

2. Only one toilet room is required in buildings accommodating less than 5 employees and less than 25 patrons per Ind 52.51 (1) (b) and Ind 54.12 (7).

3. Accessible toilet facilities shall be evenly distributed horizontally and vertically throughout the building.

(5) ADDITIONS. All additions to existing public buildings and places of employment shall be provided with a means of ingress and egress,

A-1
73/74

---

cleaned by reaching through the opening of the removable panel. Where the window consists of a fixed panel between 2 removable panels, the fixed panel may be cleaned by reaching through the openings if such fixed panel is not more than 36 inches in width.

(2) For cleaning the insides of skylights (the highest parts of which are more than 20 feet above the floor, ground, balcony or permanent platform), to which access cannot be gained by any of the means described in Wis. Adm. Code subsection Ind 1.16 (1), scaffolds as specified in chapter Ind 35, rules on Safety in Construction, shall be provided.

(3) All equipment, including building parts and attachments, used in connection with window cleaning, shall be maintained in reasonably safe condition while in use and shall be inspected at least once each month while in use, and within 30 days before their use. It shall be the responsibility of the owner of the individual safety devices or equipment to inspect and maintain the devices or equipment belonging to him so that each will comply with the requirements of this section.

(4) Where the attachments specified in subsection (1) (a) are relied upon for compliance with the provisions of this rule, said employer shall furnish or see that there is provided, an approved suitable safety belt for each employe while cleaning windows.

Note: It will be the policy of the department of industry, labor and human relations to accept anchors and safety belts which have been tested and approved by the Underwriters' Laboratories.

History: 1-2-56; am. Register, December, 1962, No. 84, eff. 1-1-63.

Ind 52.04 Requirements for barrier-free environments. (1) SCOPE. The requirements of this section are intended to insure that all public buildings and places of employment shall be accessible and usable by all citizens, including those with functional limitations.

(2) DEFINITIONS. (a) *Access or accessible.* Access or accessible means the ability of a person with a functional limitation caused by impairments of sight, hearing, incoordination, perception, semiambulatory or nonambulatory disabilities to enter and leave a public building, circulate through a public building, and use the public toilet facilities without assistance. Functional limitations may require aids such as wheelchairs, crutches, braces or canes.

(3) SITE REQUIREMENTS. A means of access from an ancillary parking facility, street or alley to the building shall be provided.

Note: Section 66.616, Wis. Stats., requires curb ramps for persons with physical disabilities at intersection crosswalks on any city or village street, connecting street, or town road provided with curbs and sidewalks.

(a) *Parking spaces.* Where parking spaces are provided, accessible parking spaces shall be designated and provided at the rate of 2% of the total number of parking spaces provided, with a minimum of one.

1. Width. Parking spaces shall be at least 12 feet wide.

2. Identification and location. All accessible parking spaces shall be identified and located as close as possible to an accessible building entrance. Parking spaces in a parking ramp shall be located as close as possible to the main entrance of the parking ramp, to an adjacent accessible public walk, or to an accessible elevator.

A-2
75/76

TABLE 52.04
REQUIREMENTS FOR ACCESSIBLE CONSTRUCTION

Occupancy and Type of Construction	Means of Ingress and Egress		Interior Circulation	Toilet Facilities
	Primary Entrance	Primary Floor		
I. All public buildings and places of employment except II, V, VII and IX	Yes[1]	Yes	Yes[1]	Yes
II. Government owned or leased buildings	Yes	Yes	Yes	Yes
III. Factories, office and mercantile buildings	Yes[1]	Yes	Yes[1]	Yes
A. Offices	Yes[1]	Yes	Yes[1, 2]	Yes
1. Telephone exchange (equipment)	No	No	No	No
B. Mercantile	Yes[1]	Yes	Yes[1]	Yes
1. Warehouses (storage)	No	No	No	No
C. Factories	Yes[1]	Yes	Yes[1]	Yes
1. Foundries	No	No	No	No
2. Slaughter houses	No	No	No	No
3. Saw and feed mills	No	No	No	No
IV. Theaters and assembly halls	Yes[1]	Yes	Yes[1]	Yes
A. Churches (Ch. Ind 54 and 55)				
1. Basements and balconies	N/A	N/A	No	No
2. Naves and chapels	Yes[3]	Yes	Yes	Yes
B. Funeral chapels	Yes[1]	Yes	Yes[1]	Yes
C. Auditoriums and theaters (fixed seats)	Yes	Yes[4]	Yes[4]	Yes
1. Motion picture booths	No	No	No	No
D. Stadiums and permanent bleachers	Yes	Yes[4]	Yes[4]	Yes
1. Portable bleachers	No	No	No	No
E. Recreational facilities	Yes[1]	Yes	Yes[1]	Yes
F. Night clubs, bars and dining rooms	Yes	Yes	Yes[5]	Yes
V. Schools and places of instruction	Yes	Yes	Yes	Yes
VI. Libraries, museums and art galleries	Yes[1]	Yes	Yes[1]	Yes
VII. Residential occupancies				
A. Apartments, row houses and town houses	Yes[6]	Yes[6]	Yes[7]	Yes
B. Motels, hotels and ski lodges	Yes	Yes	Yes[8]	Yes
C. Fraternities and sororities	Yes	Yes	Yes[9]	Yes
D. Residential and intermediate care facilities	Yes	Yes	Yes[10]	Yes
VIII. Day care centers[11]	Yes	Yes	Yes	Yes
IX. Hospitals, homes for the aged and infirm, nursing homes, mental hospitals, and places of detention	Yes	Yes	Yes[12]	Yes[13]
X. Garage occupancies	Yes[1]	Yes	Yes[1]	Yes
A. Service stations	Yes	Yes	Yes	Yes
B. Parking garages	Yes	Yes	Yes	No
XI. Mechanical equipment rooms, maintenance rooms, and janitor closets	No	No	No	No

N/A = Not applicable.

[1] If the total square footage of the building, including all floors, is less than 20,000 square feet, access is required to the primary floor and interior circulation is required only on the primary floor. In split-level and 2-story buildings, the primary floor shall include at least 40% of the total square footage of the building utilized by the public.

[2] All health care facilities, including medical and dental offices and clinics, are required to have interior circulation throughout, regardless of the square footage. Mechanical and storage areas do not require interior circulation.

[3] Access to the primary floor via the primary entrance is not required in remodeled church entrances if the vertical rise between the exterior grade and the primary floor is greater than 2 feet. Accessible public entry shall be provided to the primary floor, however, at some other location.

[4] Seating accommodations:

Capacity of place of assembly	No. of seating positions
1 – 300	5% of total
Over 300	15 spaces plus 2% of the total over 300 (maximum required not to exceed 30)

Seating spaces must be an integral part of the seating plan and not segregated. One-half of these spaces shall be designated for patrons using wheelchairs and located on a level grade. One-half of these spaces shall be designed to accommodate patrons using braces, crutches or other aids. Interior circulation is required on the primary floor.

[5] Interior circulation is required to any level containing the only public facility of its kind in the building.

[6] All apartment buildings and living units provided with individual exterior entrances shall provide an accessible entrance(s) to a primary floor. The accessible living units shall be provided at the rate of 10% of the total number of living units, with a minimum of one.

[7] Interior circulation shall be accomplished through the use of 32-inch doors within all accessible living units. All stairways, including stairways within accessible living units, shall provide a 32-inch clear space between the handrails or between the handrail and opposing wall. Corridors shall be wide enough to permit 90° turns by a standard wheelchair into all doorways. If laundry facilities are provided, the facilities shall be accessible in buildings with more than 20 units per building.

[8] Accessible sleeping units shall be provided at a rate of 5%, with a minimum of one, of the total number of units provided. Grab bars are required in bathrooms in accessible units, and 32-inch doors are required throughout. Corridors shall be wide enough to permit 90° turns by a standard wheelchair into all doorways.

[9] Access shall be provided to the primary floor, with interior circulation on the primary floor.

[10] Common use areas and 10% of the sleeping rooms shall be accessible.

[11] This does not apply to a change of occupancy.

[12] In penal institutions, 10% of the institutional living units on the primary floor shall be accessible. Vertical transportation between tiers of cells is not required.

[13] Twenty percent of all rooms designated for patient use, and the toilet rooms provided in or for these rooms, shall be designed to permit uninterrupted use by a person confined to a wheelchair, plus ample

---

interior circulation between the existing building and the addition, interior circulation within the addition, and toilet facilities as specified in Table 52.04 and subsection Ind 52.04 (4). If the existing building does not have accessible toilet facilities, toilet facilities as specified in Table 52.04 and subsection Ind 52.04 (4) must be provided in either the addition or the existing facility. If the area of the addition is more than 50% of the gross interior square footage of the existing building, the entire building shall comply with the provisions of Table 52.04 and subsection Ind 52.04 (4).

(6) EXISTING CONSTRUCTION. All existing public buildings or places of employment to be remodeled shall be provided with means of ingress and egress, interior circulation, and toilet facilities in accordance with the following:

(a) *More than 50% remodeling.* If more than 50% of the gross interior square footage of a building is remodeled, the entire building shall be provided with the requirements of Table 52.04 and subsection Ind 52.04 (4).

(b) *25% to 50% remodeling.* If 25% to 50% of the gross interior square footage of a building is remodeled, the part of the building which is remodeled shall be provided with the requirements of Table 52.04 and subsection Ind 52.04 (4).

(c) *Less than 25% remodeling.* If less than 25% of the gross interior square footage of a building is remodeled, the requirements of Table 52.04 and subsection Ind 52.04 (4) need not be provided unless the remodeling involves an entrance or exit or toilet facilities.

(d) *Remodeling in buildings with elevators.* If an existing building having passenger elevators is remodeled in accordance with the percentages above, separate accessible toilet room facilities for each sex shall be provided to serve each 5 floors, or fraction thereof, and shall comply with the requirements of subsections Ind 52.04 (4) and (8).

(e) *Change of usage.* If the usage of an existing building presently exempt is changed to a nonexempt usage, the building shall be provided with the requirements of this section.

(f) *Remodeling in stages.* If the remodeling is undertaken in stages, the percentage requirements established in this subsection shall apply to the total sum of the stages.

(7) RAMP DETAILS. (a) *Ramp slope.* Ramps shall have a slope of not more than one foot of rise in 12 feet of run. An interior ramp with a slope of one foot of rise in 8 feet may be used to overcome a total height not greater than 3 feet. The ramps must have a nonskid surface and shall have no side slope.

(b) *Ramp width.* Ramps shall be at least 4 feet wide, of which not more than 4 inches on each side may be occupied by a handrail.

(c) *Ramp handrails.* Ramps shall have a handrail on each side which shall be at least 2 feet 6 inches high (preferable height, 2 feet 3 inches). Handrails on unenclosed ramps shall include an intermediate parallel rail at mid height.

(d) *Ramp clearance.* Where ramps are provided to accessible doorways, the floor on each side of the doorway shall be level for a distance of 5 feet from the door.

(e) *Ramp platforms.* Ramps having a 1:8 slope shall have a 5-foot long level platform at 16-foot intervals. Ramps having a 1:12 slope shall have a level platform at 30-foot intervals. Both types of ramps shall have a level platform at least 6 feet long where they turn and at least 6 feet of level clearance at the bottom of the ramps.

(8)* TOILET FACILITY DETAILS. (a) *Accessible toilet rooms and compartments.* Accessible toilet rooms and toilet compartments shall be sized to provide ease of access, usability and uninterrupted mobility. Fixtures, doors, and other obstructions shall be arranged to insure accessibility.

(b) *Water closet compartments.* Water closet compartments with a front entrance approach shall be at least 36 inches by 72 inches, or at least 48 inches by 57 inches. Partitions between water closet compartments shall provide 12 inches of clear space from the floor to the bottom of the partition. The compartment door shall be outswinging and at least 32 inches wide. Sufficient clearance must be maintained to permit the door to open at least 95 degrees.

(c) *Grab bars.* Each grab bar shall be designed and anchored to support a weight of 250 pounds. The grab bars in a 36" x 72" compartment shall be installed on each side of the water closet at 33 inches high and parallel to the floor. The 48" x 57" compartment shall have a horizontal grab bar, 33 inches high, located on the wall nearest the water closet. The grab bars shall have a smooth finish with an approximate outside diameter between 1 to 2 inches, and with 1½ inches clearance between rail and wall.

(d) *Water closets.* The seat height of the water closet shall be 20 inches above the floor.

(e) *Lavatory.* At least one lavatory, mounted at a height which allows 29 inches clear space at the bottom of the apron and a maximum rim height of 34 inches, shall be provided.

Note: It is recommended that water supply controls be single lever controls and that exposed hot water pipes be insulated.

(f) *Mirror and towel dispensers.* At least one mirror and towel dispenser or hand dryer, when provided, shall be mounted not more than 40 inches above the floor.

Note: The department will accept toilet rooms, individual toilet compartments and grab bars as illustrated in the Appendix.

(9) MISCELLANEOUS DETAILS. (a)* *Door dimensions.* All accessible exterior doors shall be at least 40 inches wide. All interior doors shall be at least 32 inches wide. The bottom door stile shall be at least 8 inches high. Doors in series and doors located in corridors shall be accessible. One leaf of double-leaf doors shall be at least 32 inches wide.

Note: Automatic power-operated doors are recommended at entrances. Time-delay door closures are recommended at all accessible doors. The manual pull or push of a door is recommended not to exceed 15 pounds. Lever handles or door handles are recommended over conventional door knobs.

(b) *Door thresholds.* If door thresholds are provided, the exterior thresholds shall not extend more than ¾ inch above the finished floor, including the weatherstripping. All exterior thresholds shall be not less than 4 inches in width. Interior thresholds shall extend not more than ⅜ inch above the finished floor or carpeting. All thresholds shall be beveled to provide smooth, unbroken, rounded surfaces.

(c)* *Identification signs.* 1. The international symbol for barrier-free environments shall identify all accessible entrances, toilet facilities, drinking fountains, telephones and parking spaces.

2. The international symbol for barrier-free environments shall be placed at all entrances indicating the location of the nearest accessible entrance(s) and accessible toilet facilities. The symbol at the exterior of the building shall be legible from adjacent streets, driveways or public walks.

3. Where identification signs are provided at the interior of the building, raised letters, numbers or symbols shall be used. The signs shall be located at a height between 4 feet 6 inches to 5 feet 6 inches above the floor. Knurled hardware shall be used to identify doors leading to hazardous areas such as mechanical equipment rooms and loading docks.

(d)* *Wheelchair functions.* All 90-degree, 180-degree, 360-degree and S-turns shall be designed to provide ease of access, usability and uninterrupted mobility.

Note #1: The standard wheelchair dimensions are: length, including footrest and feet, 60 inches; width, including hands and knuckles, 29 inches.

Note #2: The minimum space required to turn 90-degree, 180-degree, 360-degree and S-turns is illustrated in the Appendix.

(e) *Grates.* All openings in gratings that will be in the path of access shall not exceed ⅜-inch in width, and shall be installed perpendicular to the direction of travel. Spacers perpendicular to the grate and flush with the top of the grate shall be provided at not more than 18-inch intervals.

(f) *Water fountains.* Water fountains shall be accessible and installed at or adapted to a usable height.

Note: Conventional floor-mounted water coolers can be serviceable to patrons with functional limitations if a small fountain is mounted on the side of the cooler 30 inches above the floor. Fully recessed water fountains are not recommended and should not be recessed in an alcove unless the alcove is wider than a wheelchair.

(g) *Public telephones.* Where coin telephone(s) are provided for public use, a minimum of one telephone shall be accessible.

Note: It is recommended that the height of the telephone coin slot be not more than 54 inches above the floor, with the dial no more than 48 inches from the floor. An adjustable volume control should be provided in areas where such service is appropriate.

History: Cr. Register, December, 1974, No. 228, eff. 1-1-75.

Ind 52.05 Size of courts. (1) In applying the following requirements, a building from 80 to 43 feet high shall be considered as having at least 3 stories, and each additional 13 feet shall be considered an additional story.

(2) Outer lot line courts shall be not less than 5 feet wide for a court 2 stories or less in height and 40 feet or less in length, measured from the lot line to the wall of the building. For each additional story in height, the width of such court shall be increased one foot; and for each additional 15 feet or fraction thereof in length, the width of such court shall be further increased one foot.

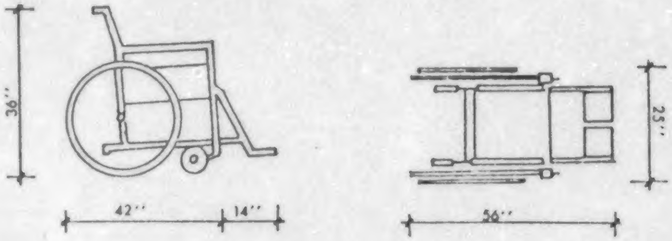
---

* See Appendix A for further explanatory material.

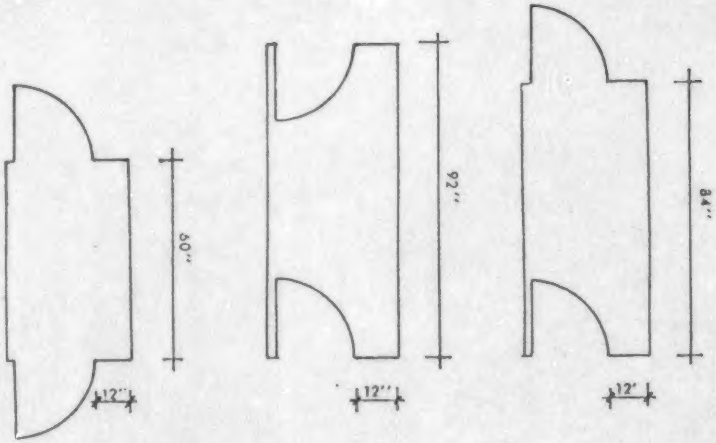
* See Appendix A for further explanatory material.

77/78
A-3

A-52.01 REQUIREMENTS FOR BARRIER-FREE ENVIRONMENTS. The following illustrations are provided to give the designer visual aids for making facilities accessible.

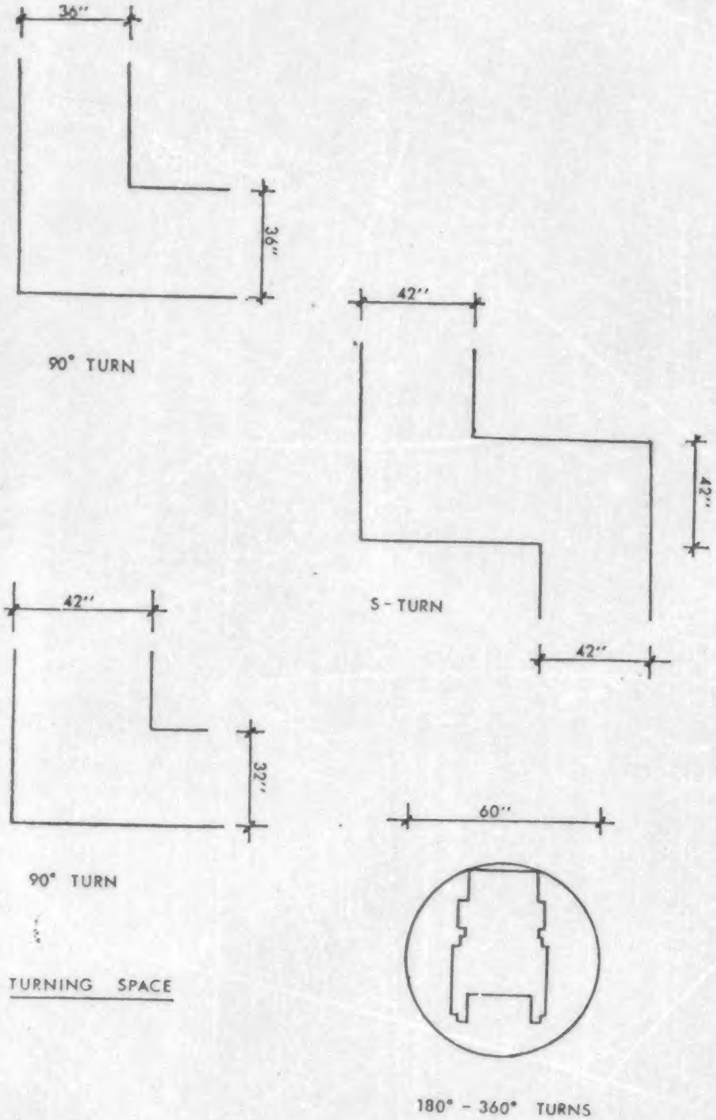


STANDARD WHEELCHAIR DIMENSIONS



DOORS IN SERIES

INTERNATIONAL SYMBOL FOR BARRIER FREE ENVIRONMENTS



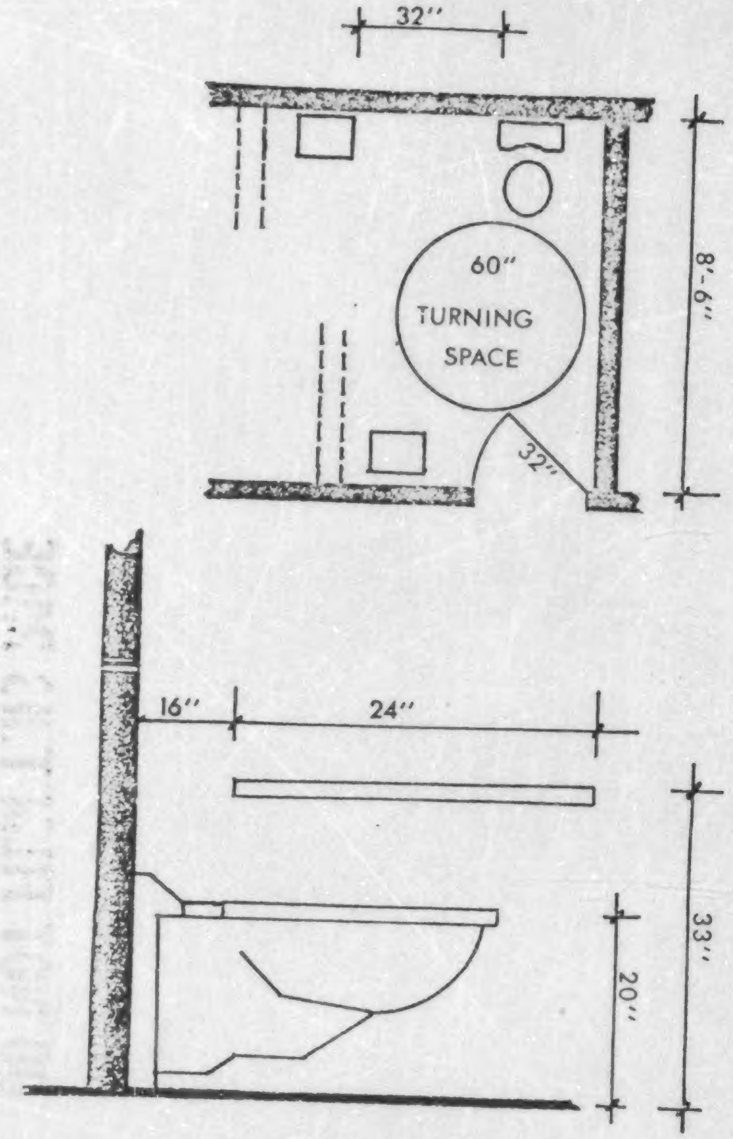
90° TURN

S - TURN

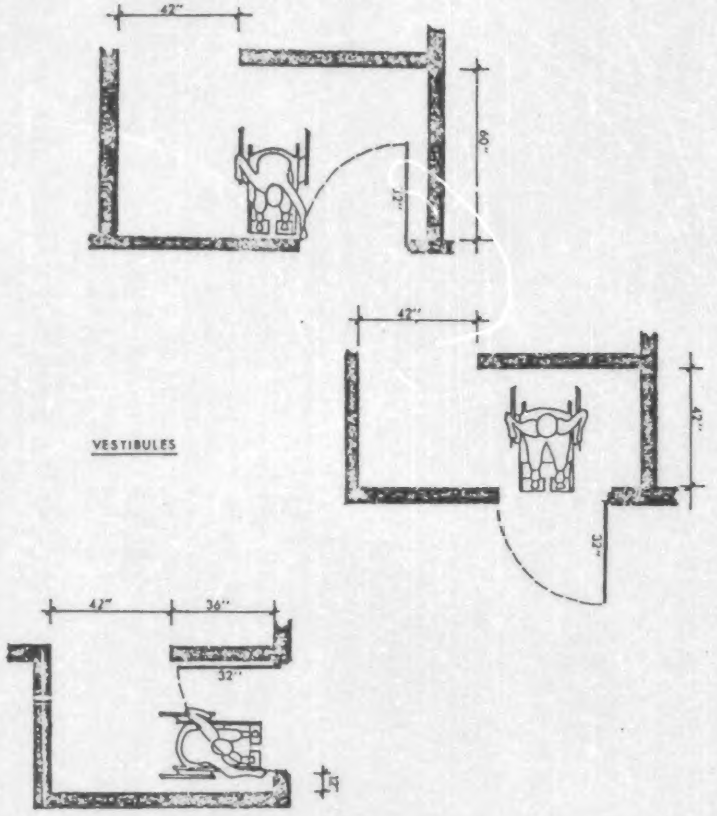
90° TURN

180° - 360° TURNS

TURNING SPACE



TOILET FACILITIES



VESTIBULES

A-6
83/84

A-57.18 The intent of this section is to apply to floor levels not more than one story below grade (at building)

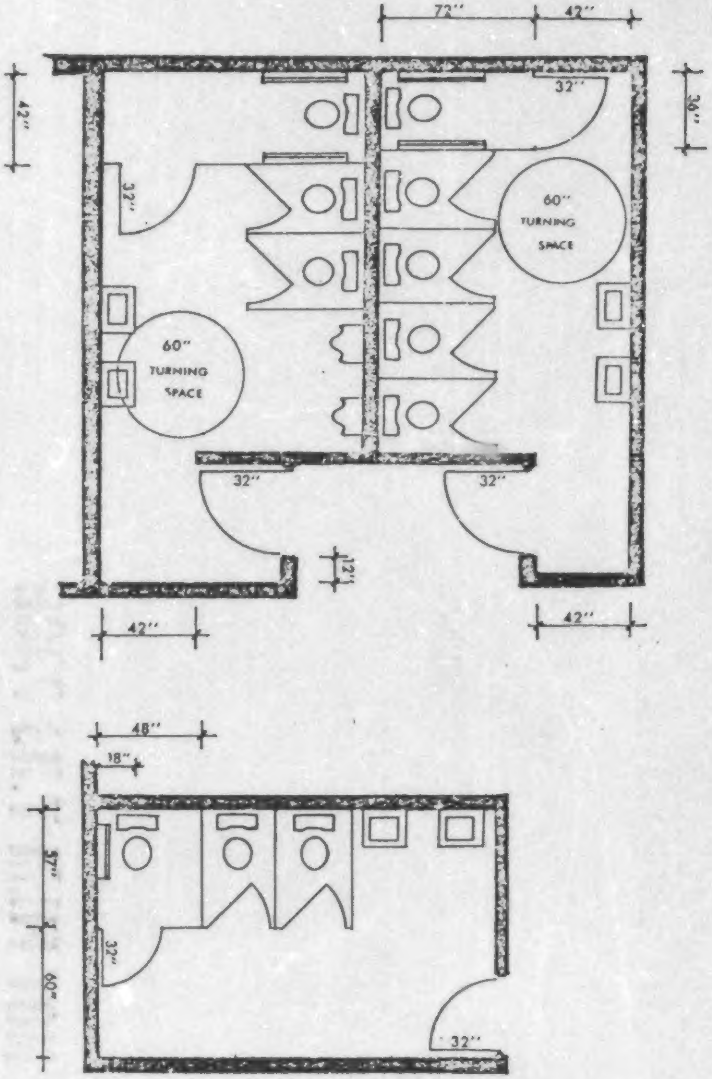
A-57.18 (6) It is the intent of this subsection that each living unit needs only one means of exit from within the unit and that the entire building be provided with no less than 2 exits.

A-60.19 (4). The standard is available from the National Fire Protection Association, 470 Atlantic Ave., Boston, Massachusetts 02210.

A-60.24 Class A fires are fires in ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics. Class B fires are fires in flammable liquids, gases and greases.

-60.35 See A-60.24.

A- [illegible] (a). See A-60.19 (4).



TOILET FACILITIES

APPENDIX B

OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) EXTRACTIONS

Occupational, Safety, and Health Act Standards

1910.23(e)(2) - Page 23509

"A stair railing shall be of construction similar to a standard railing but the vertical height shall be not more than 34" nor less than 30" from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread."

1910.23(e)(5)(iii) - Page 23510

"The size of handrails shall be: When of hardwood, at least 2" in diameter; when of metal pipe, at least 1 1/2" in diameter."

1910.23(e)(5)(iv) - Page 23510

Handrails..."capable of withstanding a load of at least 200 lbs. applied in any direction at any point on the rail."

1910.23(e)(10) - Page 23510

"Grab handles shall be not less than 12" in length and shall be so mounted as to give 3" clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle shall be such that the completed structure is capable of withstanding a load of at least 200 lbs. applied in any direction at any point of the handle."

1910.24(f) - Page 23510

"Stair Treads. All treads shall be reasonably slip-resistant and the nosings shall be of non-slip finish."

1910.36(b)(1) - Page 23531

"Every building or structure, new or old, designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of fire or other emergency."

1910.36(b)(3) - Page 23531

"Every building or structure shall be provided with exits of kinds, numbers, location, and capacity appropriate to the individual building or structure, with due regard to the character of the occupancy, the number of persons exposed, the fire protection available, and the height and type of construction of the building or structure, to afford all occupants convenient facilities for escape."

1910.37(q)(1) - Page 23533

"Exits shall be marked by a readily visible sign."

1910.37(q)(8) - Page 23533

"Every exit sign shall have the word "EXIT" in plainly legible letters not less than 6" high, with the principle strokes of letters not less than 3/4 of an inch wide."

APPENDIX C

ARCHITECTURAL BARRIER CHECKLIST GUIDE

PART I

Architectural Barrier Checklist Guide

This Checklist Guide was designed to be used in conjunction with the Checklist, Part II.

The Checklist Guide was a composite of the following resources:

1. Making Facilities Accessible to the Physically Handicapped, State University Construction Fund, 194 Washington Avenue, Albany, New York 12210, January, 1974.

2. Specifications for Making Buildings and Facilities Accessible To, and Usable By, The Physically Handicapped, American National Standards Institute, 1430 Broadway, New York, New York 10018, 1971.

3. Making Colleges and Universities Accessible to Handicapped Students, President's Committee on the Employment of the Handicapped, Washington, D. C., 1967.

4. Requirements for Barrier-Free Environments, Wisconsin Administrative Code, Section 52.04.

5. Occupational Safety and Health Standards, Federal Register, Volume 39, No. 125, Part II, Department of Labor, Occupational Safety and Health Administration, Washington, D.C., June 24, 1974.

The criteria that were used to eliminate any conflicts between specifications among the various sources were as follows:

1. Wisconsin's Administrative Code took precedence when it conflicted with any other sources. There were no conflicts between the Wisconsin Administrative Code and the Occupational Safety and Health Act (OSHA).

2. When conflicts arose in specifications not covered by the Wisconsin Administrative Code, the most stringent specifications were cited.

The Checklist and the Checklist Guide are numbered so that the statement number in the Checklist coincides with the same statement number in the Checklist Guide under any specific topic (such as Doors). It will also be noted that the Checklist Guide contains more specifications under any specific topic and covers a broader range of topics than does the Checklist.

All Wisconsin Administrative Code and OSHA requirements are marked with an asterisk on both the Checklist and the Checklist Guide. A reference number to the Wisconsin Administrative Code or OSHA standards are cited within the Checklist Guide so that easy referral can be made.

Architectural Barriers

Page Number

Exterior Access Considerations..
    Parking Lot... 1
    Building Approaches...
        Walks... 1
        Passenger Loading Zones..................................... 2
        Exterior Ramps.. 2
    Entrances... 3

Interior Access Considerations..
    General Access Considerations...
        Interior Circulation.. 4
        Doors... 4
        Elevators... 6
        Stairs.. 6
        Interior Ramps.. 7
        Water Fountains... 8
        Restrooms... 8
        Floors.. 10
        Public Telephones... 10
        Identification Summary.................................... 11
        Controls.. 12
        Emergency Readiness....................................... 12
        Hazards... 12
        Vending Machines.. 13

Special Access Considerations..
        Media Resource Center and Learning Center................. 13
        Physical Education 14
        Spectator Sport Arenas.................................... 15
        Laboratories.. 16
        Lecture Halls and Classrooms.............................. 16
        Food Service Area... 17
        Dormitories... 18
        Audio/Visual Rooms.. 18
        Recreation Areas.. 18

Architectural Barriers

Page Number

Audio/Visual Room 18
Controls 12
Doors 6
Door Handles 6
Dormitories 18
Elevators 6
Emergency Readiness 12
Emergency Warning Signals 12
Entrances 3
Exit Signs 11
Floors 10
Food Service Area 17
Grab Bars 9
Gratings 10
Handrails 2, 6
Hazards 12
Identification Summary 11
Interior Circulation 4
Laboratories 16
Lavatories 9
Lecture Halls and Classrooms 16
Media Resource Center and Learning Center 13
Parking Lot 1
Passenger Loading Zone 2
Physical Education 14
Public Telephones 10
Ramps - Exterior 2
Ramps - Interior 7
Recreation Area 18
Restrooms 8
Shower Stalls 15
Signs - Exterior 11
Signs - Interior 11
Spectator Sport Arenas 15
Stairs 6
Table Heights 17
Thresholds 5
Vending Machine 13
Walks 1
Water Fountains 8

EXTERIOR ACCESS CONSIDERATIONS

Parking Lot

*1. Number of spaces reserved for the physically disabled:

A. Number reserved ______ (2% required). (3)(a)

B. Total number of spaces ______.

*2. Width of reserved spaces (12 feet required). (3)(a)1.

*3. A means of access from the parking facility, street or alley to the building shall be provided. (3).

*4. Parking spaces shall be identified by signs. (9)(c)1.

*5. Parking spaces shall be located as close as possible to the building entrance accessible to the physically disabled. (3)(a)2.

*6. Parking spaces in a parking ramp to be as close to main entrance of parking ramp, to an adjacent public walk, or an accessible elevator as possible. (3)(a)2.

7. Approximate proximity of reserved space(s) to a main entrance ______ feet.

8. Parking lot surface hard and adequate for wheelchair use.

9. Wheeling or walking to building entrance should not necessitate danger from car or truck traffic.

10. Curbs should not limit access to walkways.

11. Reserved spaces should include end spaces.

12. Parking should not necessitate wheeling or walking behind parked cars.

13. Parking spaces should be distributed consistent with frequency and persistency of parking needs.

14. Parking should be available where left side of car opens to the sidewalk (curbs would then not have to be eliminated).

Walks

*1. At least 48" wide. (3)(b).

*2. Gradient of not more than 5%. (3)(b).

Walks (Cont'd.)

*3. A non-slip surface. (3)(b).

*4. *A. All grating openings not to exceed 3/8" in width. (9)(e).
    *B. All grating openings to be installed perpendicular to the direction of travel. (9)(e).

*5. Walks or enclosed passageways which connect two or more buildings or properties shall provide access to the buildings or properties. (3)(c)

6. Long inclined walks must have rest stops at 60-ft. intervals (maximum).

7. Intervening walks must blend to a common level.

Passenger Loading Zone

1. Is there a passenger loading zone for physically disabled students?
Yes ______ No ______.

2. A 32" minimum width ramp adjoins the walk with the street.

3. To be protected from inclement weather conditions.

4. To be centrally located.

5. To be protected from traffic by a curb.

Exterior Ramps

*1. Slope to be no more than 8.33%, or one foot rise in 12-foot run. (7)(a).

*2. Handrails:
    *A. 30"-32" high from surface of ramp. (7)(c) and OSHA 1910.23(3)(2)
    *B. Required on both sides. (7)(c).
    *C. Maximum of 4" on each side occupied by the handrail. (7)(b).
    *D. Un-enclosed ramps to have an intermediate handrail at mid height. (7)(c).
    E. Smooth.
    F. Extend 12" beyond top and bottom of ramp (as long as this does not constitute a hazard).
    *G. 1 1/2"- 2" diameter round or oval. OSHA 1910.23(e)(5)(iii).
    *H. Capable of withstanding a 200-lb. load. OSHA 1910.23(e)(5)(iv).

Exterior Ramps (Cont'd.)

*3. Non-skid surface. (7)(a).

*4. 48" wide - minimum. (7)(b).

*5. Ramp to have at least 6 feet of straight approach at the bottom. (7)(e).

*6. Ramps with a 1:12 slope are to have level platforms 48" x 60" at 30-ft. intervals for resting, and safety. (7)(e).

*7. All ramps to have a level platform at least 72" long where they turn. (7)(e).

*8. No side slope. (7)(a).

*9. Floor on the inside and outside of each ramp doorway to be level for a distance of 60" from door. (7)(d).

10. Wooden _____.

11. Concrete _____.

12. Protected from the elements:

A. Canopy

B. Automatic snow-melting capacity.

Entrances

*1. At least one primary entrance usable by persons in wheelchairs. (4) (a).

*2. Identification:

*A. Where accessible to the physically disabled, it must be so identified. (9) (c)1.

*B. If not accessible, a sign or symbol must indicate the location of the nearest accessible entrance. (9) (c)2.

*C. A sign or symbol placed at all entrances identifying the location of the nearest accessible restroom. (9) (c)2.

*D. Must be legible from adjacent streets, driveways, and public walks. (9) (c)2.

*3. Entrance platform of 60" x 60" minimum on all entrances. 12" minimum clear space on knob side of door. (4)(a)1.

*4. Thresholds:

*A. Exterior - height not to exceed 3/4". (9)(b).

*B. Exterior - 4" width minimum. (9)(b).

Entrances (Cont'd.)

*C. Interior - height not to exceed 3/8". (9)(b).

*D. All to be beveled. (9)(b).

*5. Sufficient usable exits by persons in wheelchairs in case of emergencies. OSHA 1910.36(b)(1) and (b)(3).

6. At least one entrance for the disabled student to be on same level as elevator accessibility.

7. A sturdy handrail where there are steps 30"-32" high.

INTERIOR ACCESS CONSIDERATIONS

GENERAL ACCESS CONSIDERATIONS

Interior Circulation

*1. Ramps, elevators, and chair lifts used to provide vertical and horizontal accessibility to all areas of public use. (4)(b).

*2. A minimum corridor width of 60" to be provided for a wheelchair to turn 360°. (9)(c).

*3. The entrance nearest any adjacent parking lot will be made accessible to the primary floor. (4)(a).

Doors

*1. Door width:

*A. Exterior - 40" minimum. (9)(a).

*B. Double: (9)(a)

*(1) Each door alone must provide accessibility. (9)(a).
*(2) Width:

*(a) 32" minimum for an interior door. (9)(a).
*(b) 40" minimum for an exterior door. (9)(a).

*C. Series (inner and outer): (9)(a).
*(1) Exterior door opens out and interior door opens in, clear space is to be 60". Appendix A.
*(2) Exterior door opens in and interior door opens out, clear space is to be 92". Appendix A.

Doors (Cont'd.)

*(3) Exterior door opens in and interior door opens in, clear space is to be 84". Appendix A.

*(4) Exterior door opens out and interior door opens out, clear space is to be 84". Appendix A.

*D. Automatic. (9)(a).

E. Revolving (accessibility not possible).

*3. Thresholds:

*A. Exterior height not to exceed 3/4". (9)(b).

*B. Exterior - 4" width minimum. (9)(b).

*C. Interior - Height not to exceed 3/8". (9)(b).

*D. All to be beveled. (9) (b).

*4. Door closers should not limit door usability. Time delayed door closers recommended. (9)(a) Note.

*5. Door handles:

*A. Knurled to serve the blind as indicators of hazardous areas. (9)(c)3.

B. 42" from floor.

C. To be usable by persons with a weak grip.

D. Surface to be non-slip.

E. Knob type.

*F. Horizontal push bar (preferred). (9)(a) Note.

G. Push-Pull.

*6. Maximum pressure to open a door not to be more than 15 lbs. (9)(a) Note.

7. Doors with large areas of glass should have markings on glass to avoid accidents.

8. Doors should have kick plates (extending 16" from bottom of door) and made of material and an appropriate finish to withstand abuse.

9. Viewing panels should be on all swinging doors - lower edge to be 3 ft. from floor.

10. Hallway doors should be recessed.

11. Interior doors should swing out.

Elevators

*1. Accessible to, and usable by, the physically disabled at all levels normally used by the general public. (4)(b).

*2. Allow for use by wheelchairs:

  *A. Minimum internal space - 60" x 60" to turn around. (9)(d)

  *B. Threshold:
    *(1) Height - 3/8" maximum. (9)(b).
    *(2) Edge to be beveled. (9)(b).

  C. Sensitive safety edge.

*3. The top of the elevator control panel to be accessible. (A reach of 54" is the maximum required by the Wisconsin Code) (9)(g) and (4)(b).

*4. Emergency call system accessible. (A reach of 54" is the maximum required by the Wisconsin Code) (9)(g) and (4)(b).

*5. Raised lettering on call buttons. (4)(b).

6. Must be sufficient space available for the physically disabled person to use it (not over-crowded).

Stairs

1. Shall have the curved nosing.

*2. Handrails:

  *A. Shall have handrails 32" high when measured from tread at surface of riser on both sides of the steps. OSHA 1910.23(e)(2).

  *B. All handrails (circular or oval section); 1-3/4" - 2" diameter. OSHA 1910.23(e)(5)(iii).

  *C. Capable of withstanding a 200-lb. load. OSHA 1910.23(e)(5)(iv).

3. Stair risers:

  A. Interior stair risers to be no more than 7" high with no projecting nosing.

  B. Exterior stair risers to be no more than 5-3/4" high. Tread minimum of 14" wide.

*4. Exterior stair treads and nosings to be surfaced with a non-skid finish. OSHA 1910.24(f).

5. Interior stairs handrails should extend 18" horizontally beyond the top and bottom step as long as it does not constitute a hazard.

Stairs (Cont'd.)

6. Exterior stairs handrails should extend 30" horizontally beyond the top and bottom step as long as it does not constitute a hazard.

7. Must be well-lighted at all times.

8 Stairs and floor levels should be distinguished by contrasting color.

Interior Ramps

*1. Slope:
    *A. 8.33% or 1:12 if height greater than 3 ft. (7)(a).
    *B. 12.5% or 1:8 if height less than 3 ft. and is interior. (7)(a).

*2. Handrails:
    *A. 30"-32" high from surface of ramp. (7)(c) and OSHA 1910.23(e)(2)
    *B. Required on both sides. (7)(c).
    *C. Maximum of 4" on each side occupied by the handrail. (7)(b).
    *D. Un-enclosed ramps to have an intermediate handrail at mid height. (7)(c).
    E. Smooth.
    F. Extend 12" beyond top and bottom of ramp (as long as this does not constitute a hazard).
    G. 1 1/2"- 2" diameter round or oval. OSHA 1910.23(e)(5)(iii).
    H. Capable of withstanding a 200-lb. load. OSHA 1910.23(e)(5)(iv).

*3. Non-skid surface. (7)(a).

*4. 48" wide - minimum. (7)(b).

*5. Ramp to have at least 6 ft. of straight approach at the bottom. (7)(e).

*6. Rest and safety platform - 48" x 60":
    *A. 1:12 ramp at 30-ft. intervals. (7)(e).
    *B. 1:8 ramp at 16-ft. intervals. (7)(e).

*7. All ramps to have a level platform at least 72" long where they turn. (7)(e).

*8. No side slope. (7)(a).

*9. Floor on the inside and outside of each ramp doorway to be level for a distance of 60" from door. (7)(d).

Interior Ramps (Cont'd.)

10. Wooden ____.

11. Concrete ____.

Water Fountains

*1. Water fountains shall be installed at a usable height to the physically disabled. (9)(f).

*2. Identification:

*A. Accessibility identified. (9)(c)1.

*B. Sign 54"-66" high. (9)(c)3.

*3. To be 30" from floor on floor-mounted coolers. (9)(f) Note.

*4. Fully recessed water fountains not recommended. (9)(f) Note.

*5. Water fountain not to be put in alcove unless alcove is wider than a wheelchair. (9)(f) Note.

6. Wall-mounted water fountains mounted 36" from floor.

7. Water fountains to have up-front spouts and controls.

8. Water fountains to have hand-operated or hand-and-foot-operated controls.

9. Basins shall project 8"-12" from front of wall, where appropriate, for ease of access.

Restrooms

*1. Is accessible on or from the primary floor. (4)(c)

*2. Number available to be 10% of total toilets available with a minimum of one in each restroom. (4)(c).

*3. Shall be evenly distributed vertically and horizontally throughout the building. (4)(c).

*4. Entrance of the restroom should be accessible. (9)(a) and (4)(b).

Restrooms (Cont'd.)

*5. At least one toilet stall that:

*A. Is at least 36" wide x 72" deep. (8)(b).

*B. Is at least 48" wide x 57" deep. (8)(b).

*C. Door:
*(1) 32" wide minimum. (8)(b)
*(2) Shall swing out. (8)(b)
*(3) 95° minimum opening arc. (8)(b).

*D. Grab bars:
*(1) In 'A' above:
*(a) On each side of stall. (8)(c).
*(b) 33" high. (8)(c).
*(c) Parallel to floor. (8)(c).
*(2) In 'B' above:
*(a) On wall nearest toilet. (8)(c)
*(b) 33" high. (8)(c).
*(c) Parallel to floor. (8)(c).
*(3) 1" - 2" outside diameter. (8)(c)
*(4) 1 1/2" clearance between grab bar and wall. (8)(c) and OSHA 1910.23(e)(10).
*(5) Smooth. (8)(c)
*(6) Support a minimum weight of 250 lbs. (8)(c) and OSHA 1910.23(e)(10)
(7) 24" minimum length.

*E. Toilet with seat 20" from floor. (8)(b)

*F. 12" of clear space between partition and floor. (8)(b)

*6. Identification:

*A. Accessibility shall be identified at the entrance by a sign. (9)(c)1

*B. Sign 54"-66" high. (9)(c)3

*C. Raised letters and numbers. (9)(c)3

D. On wall.

E. Room or area function should be identified, i.e., "Women's Restroom" is more clear than "Room 223".

*7. Toilet facilities shall be sized to provide ease of access, usability, and uninterrupted mobility. (8)(a)

*8. Lavatories:

*A. At least one accessible one per restroom (mounted with 29" of clearance from the floor to apron bottom). (8)(e)

*B. Rim height of 34". (8)(e)

*C. Water supply controls to be single lever. (8)(e)

*D. Exposed hot water pipes to be insulated. (8)(e)

*9. When provided, mirrors placed so that bottom edge is no further than 40" above floor. (8)(f)

Restrooms (Cont'd.)

*10. When provided, appropriate number of towel racks, towel dispensers, hand dryers, and other dispenser and disposal units mounted no higher than 40". (8)(f)

11. Urinals:

    A. Wall-mounted urinal opening to be 19" from floor.

    B. Floor-mounted urinal to be level with main floor of restroom.

12. Light switch to be 54" (maximum) from floor.

13. The toilet should be most distant from entrance.

14. Wall-mounted toilet suggested.

15. Shelf height no greater than 40" to top of shelf.

Floors

*1. Floors on a given story shall be of a common level or be connected by a suitable ramp - restrooms, etc., are not excepted. (4)(b)

*2. Gratings:

    *A. Maximum opening - 3/8" wide. (9)(e)

    *B. Perpendicular to direction of travel. (9)(e)

3. Floors to be non-slip.

Public Telephones

*1. When public telephones are provided, a minimum of one is to be usable by the physically disabled. (9)(g)

*2. Dial is to be 48" maximum in height. (9)(g) Note

*3. Coin slot to be 54" maximum in height. (9)(g) Note

*4. Adjustable volume control to be provided where appropriate. (9)(g) Note

*5. Identification:

    *A. Accessible telephones are to be identified. (9)(c)1

    *B. Sign 54"-66" high. (9)(c)3

Public Telephones (Cont'd.)

6. Hinged seat - 17" from floor when down.

7. 25" wide (minimum) if need to get into booth (with seat folded up).

Identification Summary

*1. A sign or the international symbol for barrier-free environment provided identifying accessibility.

*A. Located at all:
    *(1) Restrooms (9)(c)1
    *(2) Water fountains (9)(c)1
    *(3) Public telephones (9)(c)1

*B. Mounted 54" to 66" high. (9)(c)3

C. Mounted on the wall for standardization and to promote saftey for blind persons.

*2. Interior signs providing identification:

*A. Raised letters or numbers to be used when interior signs are provided. (9)(c)3

*B. Mounted 54" to 66" from the floor. (9)(c)3

C. Such signs should be mounted on the wall and on the knob side of the door when the door is closed so the sign won't be hidden by the door if the door is open and swings outward.

D. Room or area function should be identified; i.e., "Machine Shop - 209" would be more clear than "209" alone.

*3. An exterior sign:

*A. A sign or the international symbol for barrier-free environment provided to identify accessible building entrances. (9)(c)1

*B. A sign or symbol placed at all inaccessible entrances indicating the location of the nearest accessible entrance. (9)(c)2

*C. A sign or symbol placed at all entrances indicating the location of the nearest accessible restroom. (9)(c)2

*D. To be legible from adjacent streets, driveways, or public walks. (9)(c)2

*E. A sign or the international symbol for barrier free environment provided to identify reserved parking spaces. (9) (c)1

*4. Doors not intended for normal use and dangerous to the blind should be identified by knurled hardware. (9)(c)3

*5. Exit signs must be present at each exit, be at least 6" high, and have lettering at least 3/4" wide. OSHA 1910.37(q)

Controls

1. Controls to range from 54"-71" from floor (64.5" average).
   - A. Heat.
   - B. Ventilation.
   - C. Window draperies.
   - D. Fire alarms.
   - E. Light switches 54" (maximum) from floor.
2. Electrical outlets no less than 18" from floor. In areas especially for the physically disabled, height to be 24".

Emergency Readiness

1. Warning signals should contain an audible component for those persons with hearing capabilities.

2. Warning signals should contain a visual component for those persons without hearing capabilities.

*3. Sufficient accessible exits should exist for safety. OSHA 1910.36(b)(1), (b)(3)

*4. Exit signs must be present at each exit, be at least 6" high, and have lettering at least 3/4" wide. OSHA 1910.37(8)(q)

5. All school staff should be informed about emergency evacuation routes both for their own safety and that of other persons who do not know the evacuation routes.

6. Students should be informed of emergency evacuation routes.

7. Written emergency evacuation procedures are suggested to insure organization.

8. Any emergency evacuation procedures should include those persons who will have the most difficulty exiting a building.

Hazards

1. Access panels or manholes in floors, walks and walls are to be avoided.

2. When panels are open and in use, barricades to be put up on all open sides 8 ft. from the hazard and warning devices installed (visual signals accompanied by simultaneous audible signals).

3. Low hanging door closers (to be avoided).

4. Low hanging signs, ceiling lights, signs, fixtures.

Hazards (Cont'd.)

5. Minimum height of 7 ft. recommended.

6. Lighting on ramps to be within regulations.

7. Exit signs to be within regulations.

Vending Machines

1. Controls and access 24"-48" above floor.

2. Pull-on knobs not to exceed 8 lbs. of tension.

Media Resource Center and Learning Center

*1. If identified by a sign:
    *A. Raised letters and numbers. (9)(c)3
    *B. 54"-66" high. (9)(c)3
    C. On wall nearest door knob for standardization.
    D. Room or area function identified, i.e., "Learning Center" would be more clear than "Room 223."

*2. Interior doors are to be no less than 32" wide. (9)(a)

*3. Vertical and horizontal access will be provided to all areas of public use. (4)(b)

*4. Threshold:
    *A. Height not to exceed 3/8". (9)(b)
    *B. Edges to be beveled. (9)(b)

5. Light switches to be 54" (maximum) from the floor.

6. Study carrels:
    A. 1% accessible.
    B. 32" wide.
    C. 30" minimum clearance - floor to carrel's bottom.

7. Aisles between book shelves minimum 36" wide.

8. All tables to have a minimum of 30" clearance - floor to table bottom.

Media Resource Center
and Learning Center (Cont'd.)

9. Card files should be accessible.

10. Accessibility to all shelved materials.

11. Audio/Visual equipment should be accessible.

12. Resource material should be accessible.

Physical Education

*1. If identified by a sign:

 *A. Raised letters and numbers. (9)(c)3

 *B. 54"-66" high. (9)(c)3

 C. On wall nearest door knob for standardization.

 D. Room or area function identified, i.e., "Physical Education" would be more clear than "Room 223."

*2. Interior doors are to be no less than 32" wide. (9)(a)

*3. Vertical and horizontal access will be provided to all areas of public use. (4)(b)

*4. Threshold:

 *A. Height not to exceed 3/8". (9)(b)

 *B. Edges to be beveled. (9)(b)

*5. Accessible toilet facilities. (4)(c)1

*6. Lavatories:

 *A. At least one accessible per restroom. (8)(e)

 *B. 29' clearance to bottom of apron. (8)(e)

 *C. Rim height of 34". (8)(e)

*7. When provided, mirrors placed so that the bottom edge is no further than 40" above the floor. (8)(f)

*8. When provided, an appropriate number of towel racks, towel dispensers, hand dryers, and other dispenser and disposal units mounted no higher than 40". (8)(f)

9. Light switches to be 54" (maximum) from the floor.

10. 1% of lockers accessible to the physically disabled.

11. Shower stall accessibility:
    - A. Two shower stalls to be accessible.
    - B. Shower floor to be non-slip.
    - C. Shower stalls to measure 36" x 36" minimum.
    - D. Shower curb to be no more than 2" above floor level.
    - E. Shower seat:
        - (1) To be 19" high.
        - (2) One shower seat to be on the left-hand wall; shower seat to be on right-hand wall in the second shower.
        - (3) Shower seats are to be hinged to fold up against the wall.
    - F. Grab bar to be attached to stall wall opposite seat and on the back wall.

12. To be 42" above floor in shower stall:
    - A. Water control.
    - B. Diversionary shower spray.
    - C. Soap tray.

13. Aisles at least 36" wide to:
    - A. Locker.
    - B. Showers.
    - C. Toilets.
    - D. Lavatories.

*14. A minimum space of 60" x 60" is needed for a wheelchair to turn 180° or 360°. (9)(d)

*15. Accessibility to physical education activities, rooms, and special areas. (4)(b)

Spectator Sport Arenas

1. Building, field, or arena to be accessible.

2. Accessible spaces:
    - A. 1% minimum.
    - B. Easy access to exits.
    - C. All spaces to be level.

Laboratories

*1. If identified by a sign:
    *A. Raised letters and numbers. (9)(c)3
    *B. 54"-66" high. (9)(c)3
    C. On wall nearest door knob for standardization.
    D. Room or area function identified, i.e., "Science Laboratory" would be more clear than "Room 223."

*2. Interior doors are to be no less than 32" wide. (9)(a)

*3. Vertical and horizontal access will be provided to all areas of public use. (4)(b)

*4. Threshold:
    *A. Height not to exceed 3/8". (9)(b)
    *B. Edges to be beveled. (9)(b)

5. Work stations:
    A. If the laboratory has 24 or more stations, 1% or at least one station should be accessible to the physically disabled.
    B. Each station is to have a low work bench.
    C. 30" minimum clear space is needed for accessibility.
    D. There should be no apron.

6. If stations or equipment are fixed, aisles are to be 36" minimum between them.

7. Light switches to be 54" (maximum) from floor.

Lecture Halls and Classrooms

*1. If identified by a sign:
    *A. Raised numbers and letters. (9)(c)3
    *B. 54"-66" high. (9)(c)3
    C. On wall nearest door knob for standardization.
    D. Room or area function identified, i.e., "Classroom 223" would be more clear than "Room 223."

*2. Interior doors are to be no less than 32" wide. (9)(a)

*3. Vertical and horizontal access will be provided to all areas of public use. (4)(b)

Lecture Halls and Classrooms (Cont'd.)

*4. Threshold:

  *A. Height not to exceed 3/8". (9)(b)

  *B. Edges to be beveled. (9)(b)

5. Light switches to be 54" (maximum) from floor.

6. Seating:

  A. A 30" clear space under the seat or desk is necessary for wheelchair accessibility.

  B. The accessible seating to be level.

  C. The accessible seating to be in an optimum viewing area.

Food Service Area

*1. If identified by a sign:

  *A. Raised numbers and letters. (9)(c)3

  *B. 54"-66" high. (9)(c)3

  C. On wall nearest door knob for standardization.

  D. Room or area function identified, i.e., "Cafeteria" would be more clear than "Room 223."

*2. Interior doors are to be no less than 32" wide. (9)(a)

*3. No difference in levels between corridors and other areas intended for public use. (4)(b)

*4. Threshold:

  *A. Height not to exceed 3/8". (9)(b)

  *B. Edges to be beveled. (9)(b)

5. The physically disabled must have direct access to the dining area (i.e., not through the kitchen or dishwashing areas).

6. A. 30" from the under surface of the tables to the floor.

  B. Width between tables to be 66".

7. Outside rail heights of tray slides may be no more than 34".

8. Aisles between tray slides and control railings should be a minimum of 34" wide.

Dormitories

1. Rooms on ground floors are accessible to grade (ground level).
2. 2% minimum space accessible.
3. Room plans permit furniture placement 51" between major elements.
4. 38" between bed and wall.
5. Mattress top - 22" from floor.
6. Telephone readily accessible from the bed.
7. Clothing storage - storage and retrieval must be accomplished independently.
8. Windows to be easily operable by a person in a wheelchair.

Audio/Visual Control Rooms

1. Not to be stepped.
2. Accessible:
    A. 32" wide door.
    B. No floor barriers.
3. Aisles between equipment should be 36" wide.

Recreation Area

*1. If identified by a sign:
    *A. Raised numbers and letters are to be used. (9)(c)3
    *B. 54"-66" high. (9)(c)3
    C. On wall nearest door knob for standardization.
    D. Room or area identified, i.e., "Recreation Area" would be more clear than "Room 223."

*2. Interior doors are to be no less than 32" wide. (9)(a)

*3. Vertical and horizontal access will be provided to all areas of public use. (4)(b)

Recreation Area (Cont'd.)

*4. Threshold:
   *A. Height not to exceed 3/8". (9)(b)
   *B. Edges to be beveled. (9)(b)

5. Aisles should be 36" for easy access.

6. The physically disabled should be able to share in recreation activities as do other students.

7. A 30" clear space under the table is necessary for wheelchair accessibility.

8. Seating:
   A. Accessible seating should be on a level floor.
   B. The accessible seating should be in an optimum viewing area.

APPENDIX D

ARCHITECTURAL BARRIER CHECKLIST

PART II

Architectural Barrier
Checklist

This Checklist was designed to be used in conjunction with the Checklist Guide, Part I.

The Architectural Barrier Checklist was developed by extracting all OSHA and Wisconsin Administrative Code Standards as well as those that identified specific architectural barriers out of the Checklist Guide. It was designed to be used by a wide variety of persons: architects, builders, administrators, interest groups, and so forth.

This researcher used a three ring notebook to hold the Checklist. Each of the pages were separated by tab dividers with the tabs marked according to the section of the Checklist under it (Parking Lot and Water Fountain, for example). This way any section of the Checklist could easily be located and used. Several copies of each Checklist page were placed in the notebook. This researcher started at the top of a building and worked, floor by floor, to the bottom covering each floor completely while there. This minimized back tracking and the length of time it took to complete the Checklist.

The Checklist could be used to:

1. Check for architectural barriers in existing buildings (interior or exterior).
2. Check architectural drawings of new buildings (interior and exterior) or remodeling projects to determine potential barriers.
3. Develop education specifications needed for persons with physical disabilities.

Architectural Barrier Checklist

VTAE District ______________________________ Date ____________

Campus/Building Visited ______________________________

District Representative(s) ______________________________

____

Rater: ______________________________

Discrepancy Scale Ratings:

1. Major Discrepancy designates a difference exits between the item in question and its appropriate standard that makes the item unusable by physically disabled persons.
2. Minor Discrepancy designates that the item being rated does not meet the full requirement of the appropriate standard but was close and its use by physically disabled persons was not prohibited in most cases.
3. No Discrepancy designates that the item being rated meets or exceeds the appropriate standard's requirements.
4. Not Applicable designates that the item in question can not be rated or the item does not exist.

The Comments column is to be used for factual justification for any rating and to provide specific data to help clarify any item.

An asterisk (*) signifies that the item's or standard's source is either the Wisconsin Administrative Code or OSHA and can be found in the Checklist Guide, Part I.

Parking Lot

Location ______________________________

	Discrepancy Scale				Comments
	Major	Minor	No	NA	
	1	2	3		
*1. Spaces: A. Number reserved (2% required) _______. B. Total number ________.					
*2. Space width (12 ft. minimum)					
*3. Building access provided					
*4. Spaces identified by signs					
*5. Spaces close to accessible building entrance					
*6. Spaces in a parking ramp directly accessible					
7. Proximity of reserved spaces to accessible building entrance					
8. Parking lot surface appropriate					
9. Danger of access route to building entrance					
10. Access route to building entrance free of obstructions					

Comments:

Walks

Location ________________________________

*1. Width (48" minimum)					
*2. Gradient (5% maximum)					
*3. Non-slip surface					
*4. Gratings: *A. Opening width (3/8" maximum)					
*B. Perpendicular to direction of travel					
*5. Access of multiple buildings through walks or enclosed passageways					
6. Rest stops for long walks (60-ft. intervals maximum)					

Comments:

Entrances

Location ______________________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. Is one primary entrance accessible					
*2. Identification:					
*A. If accessible, its accessibility must be identified by a sign					
*B. If not accessible, the nearest accessible entrance must be identified . .					
*C. At all entrances, location of nearest accessible restroom must be located .					
*D. To be legible from adjacent streets, driveways, or public walks.					
*3. 60" x 60" level interior floor and exterior walk at all entrances.					
*4. Thresholds:					
*A. Maximum height - 3/4".					
*B. 4" minimum width.					
*C. Beveled edge					
*5. Sufficient accessible exits in case of emergency.					
6. Is entrance accessible to an elevator (if applicable).					
7. Sturdy handrail on the steps, 30" - 32" high					

Comments:

Emergency Readiness

Location ____________________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
1. Warning signals contain an audible component.					
2. Warning signals contain a visual component.					
*3. Sufficient quantity of accessible exits. . .					
*4. Exit signs:					
*A. Present at each exit.					
*B. 6" high - minimum.					
*C. 3/4" wide letters - minimum.					
5. Staff informed about emergency evacuation routes					
6. Students informed about emergency evacuation routes.					
7. The existence of a written emergency evacuation procedure					
8. Do emergency evacuation procedures include considerations for the disabled person . . .					

Comments:

Elevators

Location ____________________________

*1. Accessible at levels intended for public use.					
*2. Wheelchair considerations:					
*A. Minimum 60" x 60" space for 360° turning					
*B. Threshold:					
*(1) Height - 3/8" maximum					
*(2) Edge to be beveled.					
C Sensitive safety edge					
*3. Height to top of control panel (54" maximum).					
*4. Emergency call system accessible (54" max.).					
*5. Raised lettering on call buttons					
6. Sufficient space for useability.					

Comments:

Doors

Interior______________

Exterior______________

Number or Location____________________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. Door width:					
*A. Exterior - 40" minimum.					
*B. Interior - 32" minimum.					
*2. Type of door (check where appropriate):					
*A. Single leaf______.					
*B. Double _____.					
*(1) Each door alone must provide accessibility					
*(2) Width:					
*(a) 32" minimum for an interior door.					
*(b) 40" minimum for an exterior door.					
*C. Series (inner and outer) _____.					
*(1) Exterior door opens out, interior door opens in, clear space 60". .					
*(2) Exterior door opens in, interior door opens out, clear space 92" .					
*(3) Exterior door opens in, interior door opens in, clear space 84". .					
*(4) Exterior door opens out, interior door opens out, clear space 84" .					
*D. Automatic _____.					
E. Revolving (not accessible) ___________.					
*3. Threshold:					
*A. Height - 3/8" interior, 3/4" exterior - maximum					
*B. Edges to be beveled					
*C. Width, 4" minimum, exterior					
*4. Maximum push-pull of 15 lbs. to open					
*5. Door handles:					
*A. Knurled to warn of hazardous areas. . .					
B. 42" high.					
C. Usable with a weak grip					
D. Non-slip surface.					
E. Knob type					
*F. Horizontal push bar (preferred)					
G. Push-Pull					
6. Door closers not to limit accessibility. . .					

Comments:

Stairs

Interior ________

Exterior ________

Location ______________________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
1. Curved nosing.					
*2. Handrails:					
*A. 32" high					
*B. 1 3/4"- 2" diameter oval or circular . .					
3. Stairs risers:					
A. Interior - 7" maximum.					
B. Exterior - 5-3/4" maximum with 14" minimum width tread.					
*4. Non-slip finish.					

Comments:

Water Fountains

Location ____________________

*1. Accessibility: A. Total number ______. B. Number accessible ______.					
*2. Identification: *A. Accessibility identified					
*B. Sign 54"-66" high.					
*3. 30" high on floor-mounted coolers.					
*4. Fully recessed models' accessibility					
*5. Accessibility of those in an alcove.					
6. 36" high on wall-mounted coolers					

Comments:

Ramps

Exterior __________

Interior __________

Location ______________________________

	Discrepancy Scale				
	Major 1	Minor 2	No 3	NA	Comments
*1. Slope:					
*A. 8.33% or 1:12, if height greater than 36"					
*B. 12.5% or 1:8 if height less than 36" (interior only).					
*2. Handrails:					
*A. Height (30"-32")					
*B. On both sides.					
*C. Maximum 4" of each side occupied by handrail.					
*D. Intermediate rail for un-enclosed ramps.					
E. Smooth					
F. Extend beyond top and bottom of ramp . .					
*G. 1 1/2"- 2" diameter round or oval. . . .					
*3. Non-skid surface.					
*4. Width (48" minimum)					
*5. 72" straight bottom approach.					
*6. 48" x 60" rest and safety platform.					
*A. 1:12 ramp at 30-foot intervals					
*B. 1:8 ramp at 16-foot intervals (interior only).					
*7. 48" x 72" turning platform (72" minimum length).					
*8. No side slope.					
*9. 60" level floor on inside and outside of ramp-door intersection					
10. Wooden					
11. Concrete.					
12. Protected from the elements (exterior only)					
A. Canopy					
B. Automatic snow melting capacity.					

Comments:

Restrooms

Men ______________

Women ______________

Location ________________________________

	Discrepancy Scale				Comments
	Major	Minor	No	NA	
	1	2	3		
*1. Is accessible on or from primary floor. . . .					
*2. One toilet per restroom accessible: A. Number of restrooms __________. B. Number of accessible restrooms _______ .					
*3. Accessible toilets evenly distributed in building.					
*4. Entrance accessible					
*5. Toilet stall specifications: *A. 36" x 72" minimum size, or					
*B. 48" x 57" minimum size					
*C. Door: *(1) 32" wide minimum					
*(2) Shall swing out.					
*(3) 95° minimum opening arc.					
*D. Grab bars: *(1) In "A" Above; *(a) On each side of stall . . .					
*(b) 33" high					
*(c) Parallel to floor.					
*(2) In "B" above: *(a) On wall nearest toilet . . .					
*(b) 33" high					
*(c) Parallel to floor.					
*(3) 1"-2" outside diameter					
*(4) 1 1/2" clearance between grab bar and wall					
*(5) Smooth					
*(6) Support 250 lbs. minimum					
*E. Toilet seat 20" from floor					
*F. 12" clear space between partition and floor.					
*6. Identification: *A. Accessibility identified					
*B. Sign 54"-66" high.					
*C. Raised letters and numbers used.					
D. On wall.					
E. Room or area function identified					
*7. Restrooms sized for ease of access and usability					

Restrooms (Cont'd.)

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*8. Lavatories:					
*A. One accessible per restroom. (29" clearance to apron bottom)					
*B. 34" rim height					
*C. Single lever water control					
*D. Insulated hot water pipes					
*9. Mirrors' (when provided) bottom edge 40" high					
*10. Hand dryers and dispensers (when provided) 40" high					
11. Urinals:					
A. Wall mounted, opening 19" high					
B. Floor mounted, to be same level as floor.					
12. Light switch 54" high - maximum					
13. Door handle 42" high					

Comments:

Floors

Location ______________________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. All floors on a given story to be accessible.					
*2. Gratings: *A. Maximum opening - 3/8" wide.					
*B. Perpendicular to direction of travel . .					
3. Non-slip.					

Comments:

Public Telephones

Location ______________________

*1. When provided, minimum of one accessible. A. Number of locations provided __________. B. Number of locations accessible ______ .					
*2. Dial 48" maximum height					
*3. Coin slot 54" maximum height.					
*4. Adjustable volume control (where appropriate).					
*5. Identification: *A. Accessibility identified					
*B. Sign 54"-66" high.					
6. Hinged seat 17" high when down.					
7. If booth, 25" wide minimum with seat folded up					

Comments:

Identification Summary

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. Interior signs identifying accessibility:					
*A. Located at all accessible:					
*(1) Restrooms					
*(2) Water fountains					
*(3) Public telephones					
*B. Mounted 54" to 66" high					
C. Mounted on the wall					
*2. Interior signs providing identification:					
*A. Raised letters and numbers to be used					
*B. Mounted 54" to 66" high					
C. Mounted on the wall					
D. Designates room or area function.					
*3. An exterior sign:					
*A. At all accessible entrances designating their accessibility					
*B. At all inaccessible entrances designating the nearest accessible entrance					
*C. At all entrances locating the nearest accessible restroom					
*D. To be legible from adjacent streets, driveways, or public walks.					
*E. To identify reserved parking spaces					
*4. Knurled hardware used on doors to hazardous areas.					
*5. Exit signs:					
*A. Present at each exit.					
*B. 6" high - minimum					
*C. 3/4" wide letters - minimum					

Comments:

Media Resource Center
and Learning Center

Location ______________________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. If identified by a sign:					
*A. Raised letters and numbers.					
*B. 54"-66" high.					
C. On wall					
D. Room or area function identified. . . .					
*2. Door width (32" minimum)					
*3. Entrance accessible.					
*4. Threshold:					
*A. Height - 3/8" - maximum					
*B. Edge to be beveled.					
5. Light switch 54" high - maximum.					
6. Study carrels:					
A. 1% accessible.					
B. 32" wide					
C. 30" clearance from floor					
7. Aisles between book shelves -minimum 36" wide					
8. Tables: 30" clearance from floor.					
9. Card files accessible.					
10. Accessibility to all shelved materials . . .					
11. A/V equipment accessibility.					
12. Resource material accessibility.					

Comments:

Physical Education

Men ____________________

Women ____________________

	Discrepancy Scale				Comments
	Major	Minor	No	NA	
	1	2	3		
*1. If identified by a sign:					
*A. Raised letters and numbers					
*B. 54"-66" high					
C. On wall					
D. Room or area function identified					
*2. Door width (32" minimum)					
*3. Access to physical education locker area					
*4. Threshold:					
*A. Height - 3/8" - maximum					
*B. Edge to be beveled					
*5. Accessible toilet facilities					
*6. Lavatories:					
*A. Number accessible - (1 minimum)					
*B. 29" clearance					
*C. 34" rim height					
*7. If mirror, 40" to bottom edge					
*8. Hand dryers and dispensers (when provided) 40" high					
9. Light switch 54" high - maximum					
10. Locker accessibility (1% minimum)					
11. Shower stall accessibility:					
A. Number accessible (2 minimum)					
B. Non-slip floor					
C. 36" x 36" stall - minimum					
D. 2" high shower curb (maximum)					
E. Shower seat:					
(1) 19" high					
(2) On left hand wall in one shower, right hand wall in the other					
(3) Hinged to fold against wall					

	Discrepancy Scale				Comments
	Major	Minor	No	NA	
	1	2	3		
F. Grab bar attached to opposite (of seat) and back wall.					
12. To be accessible in shower stall:					
A. Water control (42" high)					
B. Diversionary shower spray (42" high) . .					
C. Soap tray (42" high)					
13. Aisles at least 36" wide to:					
A. Lockers.					
B. Showers.					
C. Toilets.					
D. Lavatories					
*14. 60" x 60" turning space.					
*15. Accessibility to physical education activities, rooms, and special areas					

Comments:

Spectator Sport Arenas

Name ____

	Discrepancy Scale				Comments
	Major	Minor	No	NA	
	1	2	3		
1. Accessibility of building, field, or arena. .					
2. Accessible spaces:					
A. 1% minimum					
B. Easy access to exits					
C. All to be level.					

Comments:

Laboratories

Name ______________________

Location ______________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. If identified by a sign:					
*A. Raised letters and numbers					
*B. 54"-66" high					
C. On wall					
D. Room or area function identified					
*2. Door width (32" minimum)					
*3. Access to laboratory					
*4. Threshold:					
*A. Height - 3/8" maximum					
*B. Edge to be beveled					
5. Work stations:					
A. If 24 stations exist, 1% or at least one to be accessible					
B. Low enough to be usable					
C. 30" minimum clearance from floor					
D. No apron					
6. 36" minimum aisles					
7. Light switch 54" high - maximum					

Comments:

Lecture Halls and Classrooms

Room Number ____________________

Name ____________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. If identified by a sign:					
*A. Raised numbers and letters.					
*B. 54"-66" high.					
C. On wall					
D. Room or area function identifed					
*2. Door width (32" minimum)					
*3. Access of lecture hall or classroom.					
*4. Threshold:					
*A. Height - 3/8" maximum					
*B. Beveled edge.					
5. Light switch 54" high - maximum.					
6. Seating:					
A. 30" clearance from floor					
B. Is the floor level					
C. In an optimum viewing area					
7. 36" minimum between fixed equipment.					

Comments:

Food Service Area

Location ______________________________

	Discrepancy Scale				Comments
	Major 1	Minor 2	No 3	NA	
*1. If identified by a sign:					
*A. Raised numbers and letters.					
*B. 54"-66" high.					
C. On wall					
D. Room or area function identified. . . .					
*2. Door width (32" minimum)					
*3. Access of dining area.					
*4. Threshold:					
*A. Height - 3/8" maximum					
*B. Edge to be beveled.					
5. Direct accessibility to dining area. . . .					
6. Tables:					
A. 30" clearance from floor.					
B. 66" minimum between tables.					
7. 34" high slide tray rail height					
8. 34" wide aisle between tray slides and control railings.					

Comments:

Recreation Area

Location ________________________

	Discrepancy Scale				Comments
	Major	Minor	No	NA	
	1	2	3		
*1. If identified by a sign:					
*A. Raised letters and numbers.					
*B. 54"-66" high.					
C. On wall					
D. Room or area function identified. . . .					
*2. Door width (32" minimum)					
*3. Accessibility to recreation area					
*4. Threshold:					
*A. Height - 3/8" maximum					
*B. Edge to be beveled.					
5. 36" aisles					
6. Accessibility of games					
7. Tables: 30" clearance from floor					
8. Seating:					
A. Is the floor level					
B. In an optimum viewing area					

Comments:

APPENDIX E

PAMPHLET "CHECKLIST FOR 14 COMMON BARRIERS TO THE PHYSICALLY DISABLED IN VOCATIONAL AND TECHNICAL EDUCATION FACILITIES"

International Symbol for

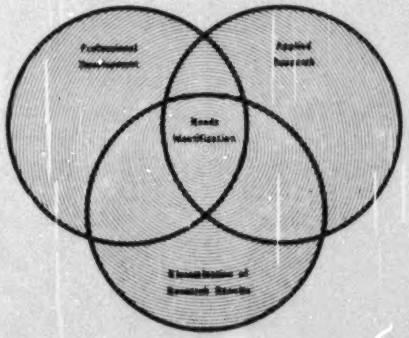
Barrier Free Environments

"Access or Accessibility: means the ability of a person with a functional limitation caused by impairments of sight, hearing, incoordination, perception, semi-ambulatory or non-ambulatory disability, to enter and leave a public building, and use the toilet facilities without assistance. Functional limitations may require aids such as wheelchairs, crutches, braces, or canes." [2]

RESEARCH EXEMPLARY
Coordination
RCU
Stimulation Dissemination
DEVELOPMENT

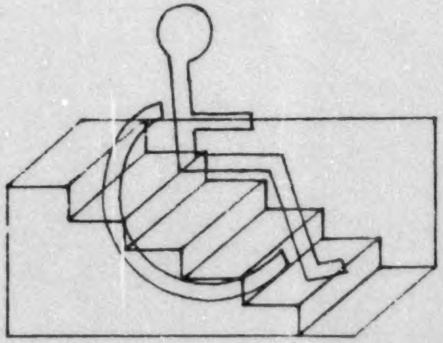
Other projects of University of Wisconsin-Stout's Center for Vocational, Technical, and Adult Education:

1. Planning Workshop for Vocational Education for Handicapped Students.
2. Work Evaluation for Economically and Educationally Disadvantaged Families of Barron County.
3. Alternative Delivery Systems for Vocational Education in Sparsely Populated Areas.
4. Computer Managed Instructional System
5. Articulation of Secondary and Post-Secondary Education.
6. Competencies Vocational Teachers Need to Teach the Educable Mentally Retarded.
7. Professional Skills for VTAE Call-Staff II.
8. Professional Growth Week for VTAE Instructors



Checklist
for
14 Common
Barriers to the Physically Disabled
in
Vocational and Technical
Education Facilities

(Look inside to see how your school compares)



by

Keith Frank

CVTAE
University of Wisconsin-Stout
May, 1975

---

[2] Wisconsin Administrative Code, Chapter 54, Section .04.

How Does Your School Compare?

Most Frequent Barriers	Barrier Free	Should Check
1. Insufficient number of reserved parking spaces (2% of total)	☐	☐
2. Narrow reserved parking spaces (12 ft. minimum)	☐	☐
3. Control panels in elevators are to high for a person in a wheelchair to reach (54" to the top)	☐	☐
4. Water fountains are too high to get a drink (36")	☐	☐
5. Toilet stalls are too short to close the door with a wheelchair inside (36"x 72")	☐	☐
6. Lavatories in restrooms are inaccessible (29" to under side)	☐	☐
7. Hand towel dispensers and mirrors in restrooms are mounted too high to be reached (40 inches)	☐	☐
8. Public telephones are mounted too high to be reached (54 inches to coin slot)	☐	☐
9. Study carrels, tables, and other working surfaces do not permit wheelchairs to slide underneath them to maximize working area and reach (30 inches)	☐	☐
10. Classroom and laboratory identification is commonly mounted on doors. This tends to be hazardous to the blind (54-66 inches high)	☐	☐
11. Raised numbers and letters used on identification signs so the blind can read them	☐	☐
12. Identification signs not communicating a room's purpose (such as English 9 or Machine Shop)	☐	☐
13. Sufficient number of accessible exits in case of emergency (2 or more at opposite ends of the building)	☐	☐
14. The use of more signs designating accessibility (such as the International Symbol for Barrier Free Environments) would promote information and, therefore, independence and freedom (See reverse side)	☐	☐
Building Entrances		☐
Restrooms	☐	☐
Water Fountains		☐
Parking Spaces	☐	☐
Public Telephones	☐	☐

Physical Disabilities

Non-ambulatory:

"Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheelchairs.

Semi-ambulatory:

"Impairments that cause individuals to walk with difficulty or insecurity. Individuals using braces or crutches, amputees, arthritics, spastic, and those with pulmonary and cardiac ills may be semi-ambulatory.

Sight:

"Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

Hearing:

"Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.

Incoordination:

"Faulty coordination of palsy from brain, spinal, or peripheral nerve injury.

Aging:

"Those manifestations of the aging process that significantly reduce mobility, flexibility, coordination, and perceptiveness but are not accounted for in the aforementioned categories." 1.

1. An Illustrated Handbook of the Handicapped Section of the North Carolina State Building Code, State of North Carolina, Dept. of Insurance, P.O. Box 26387, Raleigh, N.C., 27611, p. 12

APPENDIX F

ANTHROPOMETRICS OF PHYSICALLY DISABLED PERSONS

appendix A

(3)—the individual functioning in a wheelchair

Extremely small, large, strong, or weak and involved individuals could fall outside the ranges of reach and their reach could vary. However, these reaches were determined using a large number of individuals who were functionally trained, with a wide range in individual size and involvement.

a) The average unilateral vertical reach is 60 inches and ranges from 54 inches to 78 inches.

b) The average horizontal working (table) reach is 30.8 inches and ranges from 28.5 inches to 33.2 inches.

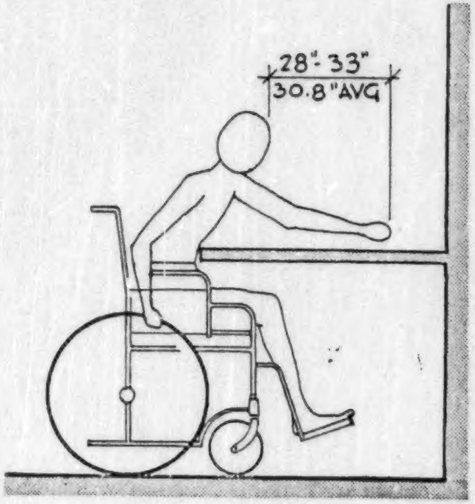
c) The bilateral horizontal reach, both arms extended to each side, shoulder high, ranges from 54 inches and averages 64.5 inches.

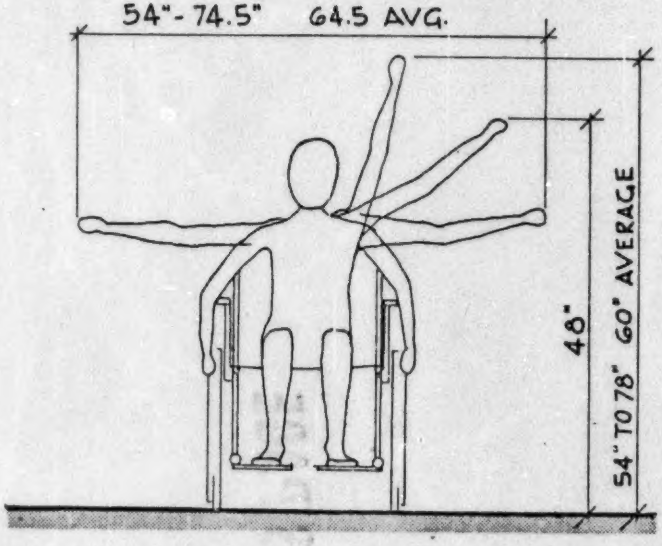
d) An individual reaching diagonally, as would be required in using a wall-mounted dial telephone or towel dispenser, would make the average reach (on the wall) 48 inches from the floor.

(4)—the individual functioning on crutches and walkers

Most individuals ambulating on braces or crutches, or both, or on canes are able to manipulate within the specifications prescribed for wheelchairs, although doors present quite a problem at times. However, attention is called to the fact that a crutch tip extending laterally from an individual is not obvious to others in heavily trafficked areas, certainly not as obvious or protective as a wheelchair and is, therefore, a source of vulnerability.

a) On the average, individuals 5 feet 6 inches tall require 31 inches between crutch tips in the normally accepted gaites. (b) On the average, individuals 6 feet tall require 32.5 inches between crutch tips in the normally accepted gaites.





3) THE INDIVIDUAL FUNCTIONING IN A WHEELCHAIR.

(a) THE AVERAGE UNILATERAL VERTICAL REACH IS 60".

(b) THE AVERAGE HORIZONTAL WORKING REACH IS 30.8".

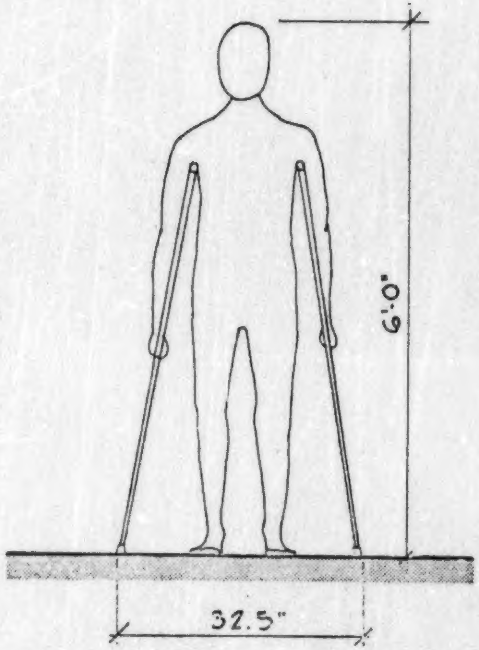
(c) THE BILATERAL HORIZONTAL REACH (BOTH ARMS EXTENDED TO SIDE SHOULDER HIGH) AVERAGES 64.5".

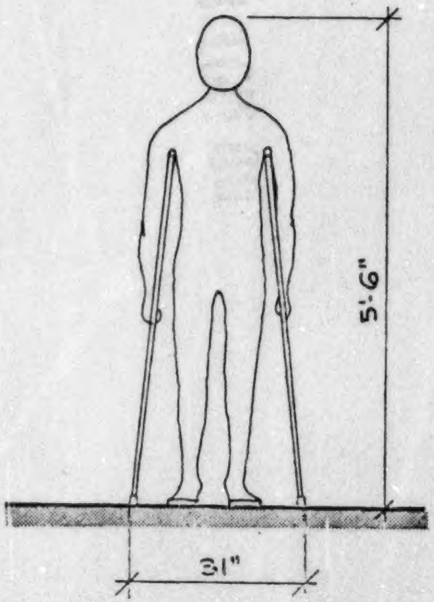
(d) THE DIAGONAL REACH, AS FOR WALL MOUNTED PHONE, IS 48" FROM THE FLOOR.

4) THE INDIVIDUAL FUNCTIONING ON CRUTCHES & WALKERS.

(a) INDIVIDUALS 5'-6" TALL REQUIRE 31" BETWEEN CRUTCH TIPS.

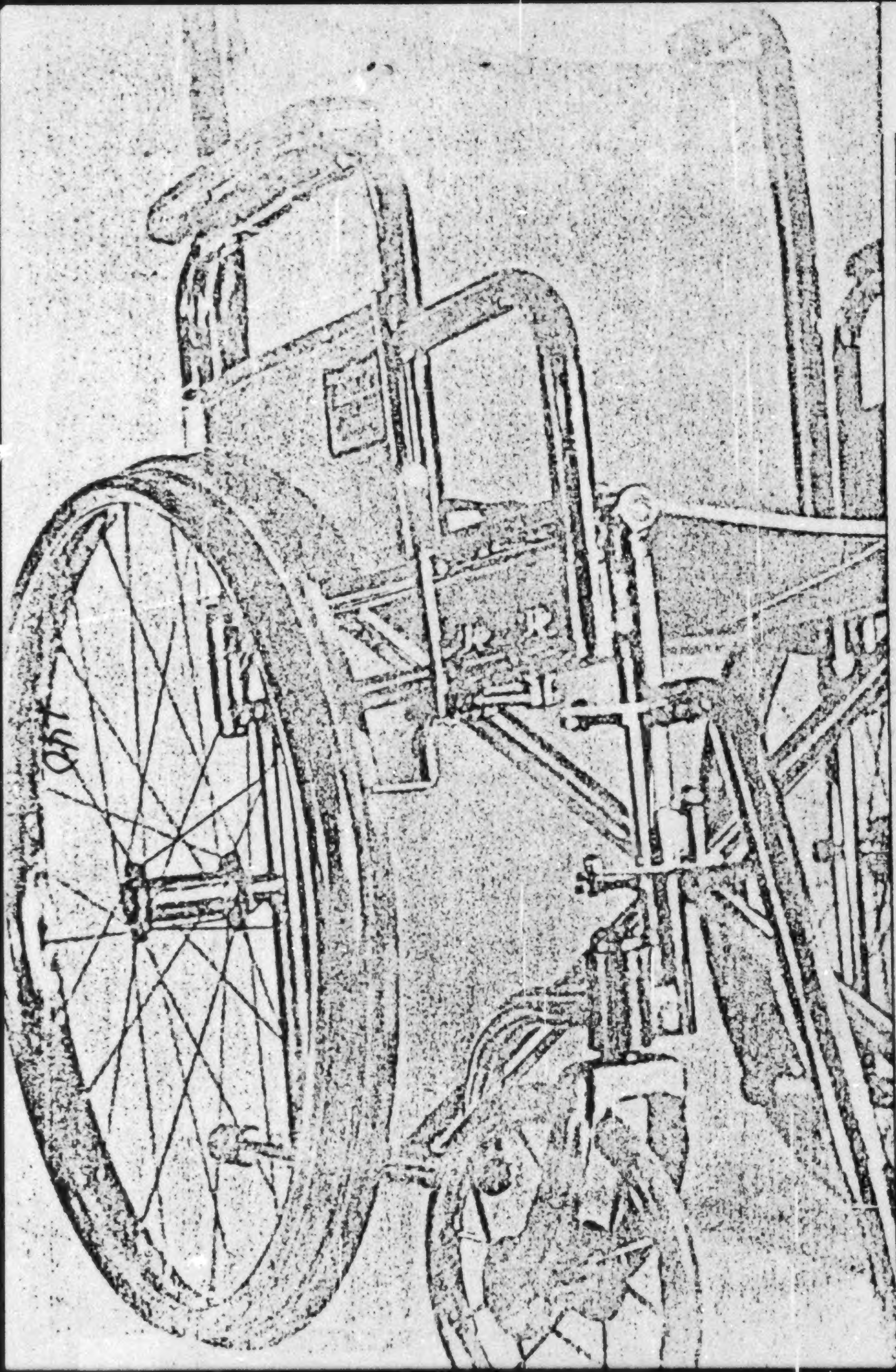
(b) INDIVIDUALS 6'-0" TALL REQUIRE 32.5" BETWEEN CRUTCH TIPS.





APPENDIX G

WHEELCHAIR SPECIFICATIONS



appendix A-design specifications

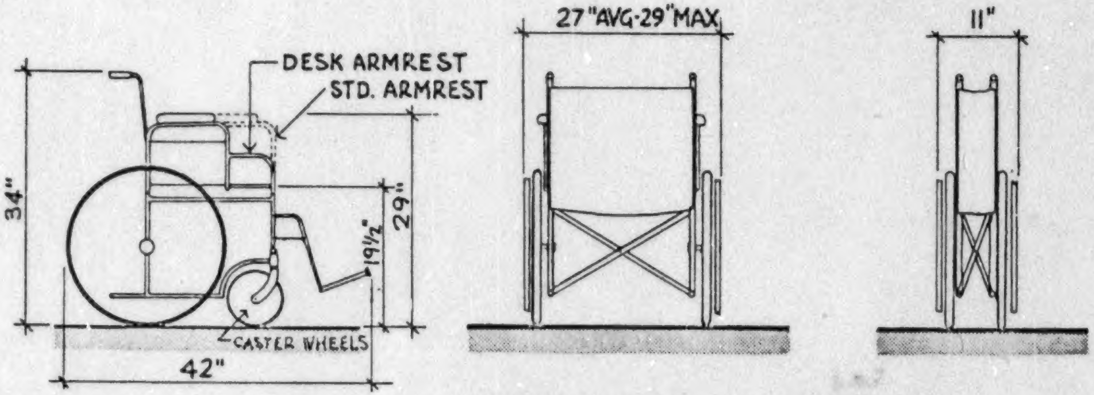
(1)—wheelchair specifications

The collapsible-model wheelchair of tubiar metal construction with plastic upholstery for back and seat is most commonly used. The standard model of all manufacturers falls within the following limits, which were used as the basis of consideration.

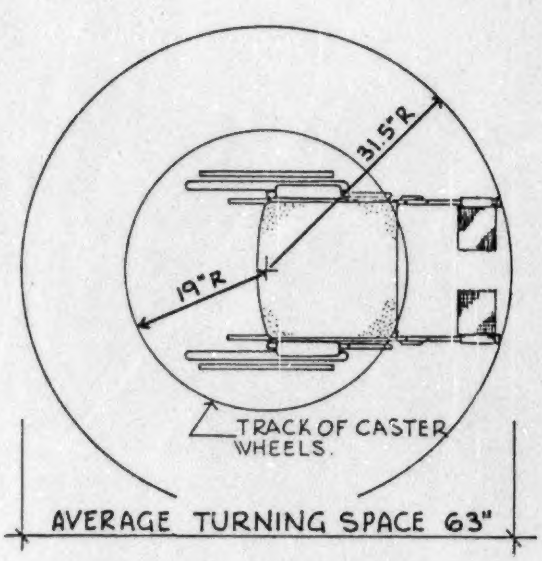
1) Length: 42 inches
2) Width, when open: 27 inches average, 29 inches maximum
3) Height of seat from floor: 19½ inches
4) Height of armrest from floor: 29 inches
5) Width, when collapsed: 11 inches

(2)—fixed turning radius, wheel to wheel

a) The fixed turning radius of a standard wheelchair, wheel to wheel, (the tracking of the caster wheels and large wheels of a wheelchair when pivoting on a spot) is 18 inches.

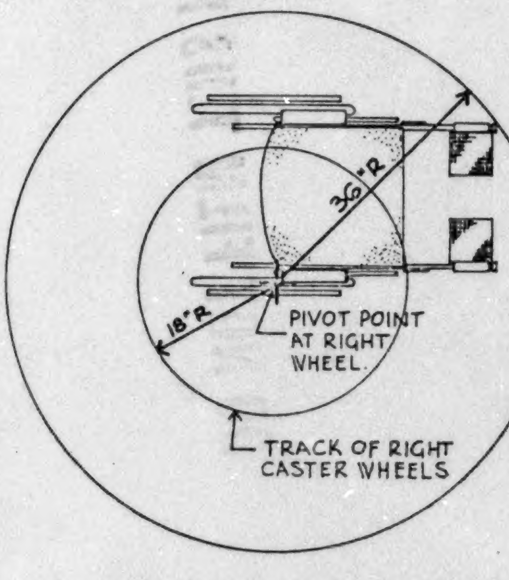


WHEELCHAIR DIMENSIONS



PIVOT POINT AT CENTER

USUAL TURNING METHOD - MOVING ONE WHEEL FORWARD & THE OTHER BACKWARD TO PIVOT ABOUT CENTER.



PIVOT POINT AT ONE WHEEL

ALTERNATE TURNING METHOD - LOCKING ONE WHEEL & TURNING THE OTHER.

TURNING RADII OF WHEELCHAIR

1) WHEELCHAIR SPECIFICATIONS:

THE MOST COMMON TYPE OF WHEELCHAIR USED BY NON-AMBULANT PERSONS OUTDOORS IS THE COLLAPSIBLE TUBULAR METAL CHAIR WITH PLASTIC OR NYLON UPHOLSTERY FOR SEATS & BACKS. TO SUIT NEEDS OF VARIOUS DISABILITIES THESE ARE AVAILABLE WITH NUMEROUS ATTACHMENTS & REMOVABLE PARTS SUCH AS LEG RESTS, ARM RESTS, TILT UP LEG RESTS, TILTING BACK RESTS, ETC. THE STANDARD BASIC CHAIR IS ILLUSTRATED ON THIS PAGE.

2) FIXED TURNING RADIUS OF WHEELCHAIRS

(a) THE FIXED TURNING RADIUS OF WHEELCHAIRS, WHEEL TO WHEEL, WHEN PIVOTING ON A SPOT IS 18". I.E. DISTANCE FROM PIVOT SPOT TO TRACK OF CASTER WHEEL.

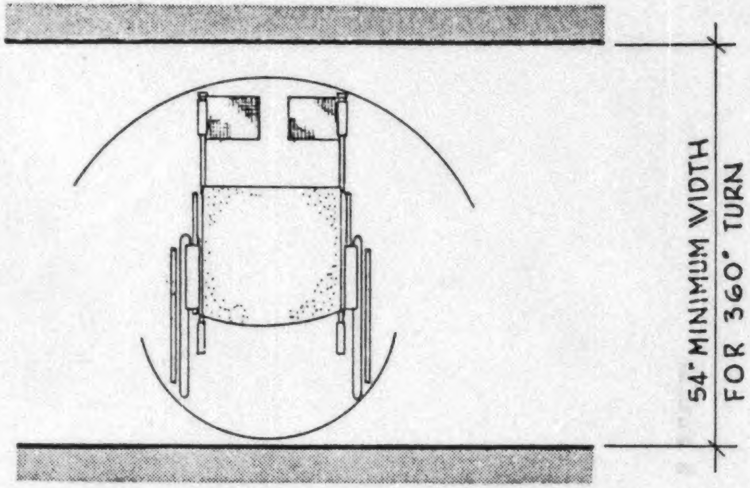
THE TURNING RADIUS OF WHEELCHAIRS FROM PIVOT POINT AT CENTER OF CHAIR TO FORMOST PROJECTION OF THE FOOTRESTS IS APPROXIMATELY 31.5"

appendix A

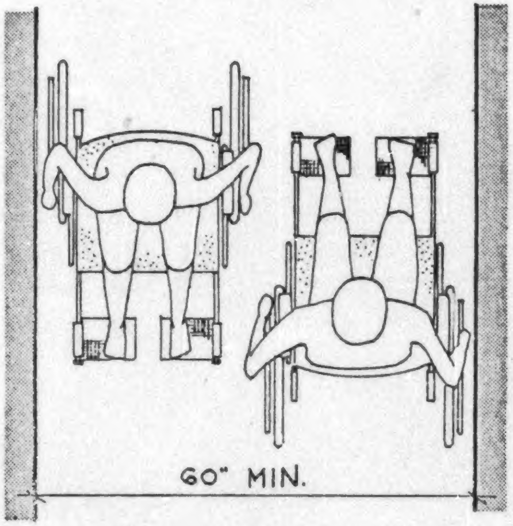
b) The fixed turning radius, front structure to rear structure, (the turning radius of a wheelchair, left front-foot platform to right rear wheel, or right front-foot platform to left rear wheel, when pivoting on a spot) is 36 inches. The average turning space required is 63 inches x 63 inches.

NOTE: Actually, a turning space that is longer than it is wide, specifically 63 by 56 inches, is more workable and desirable. In an area with two open ends, such as might be the case in a corridor, a minimum of 54 inches between two walls would permit a 360-degree turn.

c) A minimum width of 60 inches is required for two individuals in wheelchairs to pass each other.



(b) THE FIXED TURNING RADIUS FROM PIVOT POINT AT RIGHT REAR WHEEL TO LEFT FRONT FOOTREST, OR FROM LEFT REAR WHEEL PIVOT POINT TO RIGHT FRONT FOOTREST, IS 36". THE AVERAGE TURNING SPACE REQUIRED IS 63"× 63".



(c) A MINIMUM WIDTH OF 60" IS REQUIRED FOR TWO INDIVIDUALS IN WHEELCHAIRS TO PASS EACH OTHER.

An Illustrated Handbook of the Handicapped Section of the North Carolina State Building Code, Department of Insurance, State of North Carolina, P. O. Box 26387, Raleigh, North Carolina 27611, September 1, 1973.